FMC Idaho LLC, Pocatello, Idaho

RCRA Pond Phosphine Assessment Study Report

January 2012

MWH

TABLE OF CONTENTS

TABLE OF CONTENTS

FIGURES

Figures are located at the end of Sections 2 and 4.

Figure

TABLES

Tables are located at the end of Sections 3 and 5.

Table

TABLE OF CONTENTS

TABLES (Continued)

Table

APPENDICES

Appendix

ACRONYMS AND ABBREVIATIONS

ags	above ground surface
bgs	below ground surface
EPA	U.S. Environmental Protection Agency
ET	evapotraspirative
FMC	FMC Corporation
GES	gas extraction system
GETS	gas extraction and treatment system
GOPC	gases of potential concern
HASP	Health and Safety Plan
HCN	hydrogen cyanide
H2S	hydrogen sulfide
HF	hydrogen fluoride
IH	industrial hygiene
LCDRS	leachate collection, detection and removal system
MWH	MWH Americas, Inc.
PH3	phosphine
PMP	Pond Management Plan
ppm	parts per million
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
Site	FMC LLC Idaho facility
SOW	Statement of Work
TMP	temperature monitoring point
UAO	Unilateral Administrative Order

1.0 INTRODUCTION

This *RCRA Pond Phosphine Assessment Study Report* ("*Assessment Study Report*") has been prepared pursuant to the *Final RCRA Pond Phosphine Assessment Study Work Plan* ("*Assessment Study Work Plan*," MWH, 2011g) and the RCRA Pond Unilateral Administrative Order ("RCRA Pond UAO") for Removal Actions (EPA, 2010) as modified by an EPA letter dated October 26, 2010.

1.1 BACKGROUND

FMC has been working with the EPA to identify appropriate monitoring points and triggers for additional monitoring and/or contingent gas extraction at the closed RCRA ponds. EPA has determined that modification of the post-closure monitoring program and gas extraction triggers is necessary in light of the experiences at Pond 16S (and later at Pond 15S) where the temperature and/or pressure thresholds specified in each of the RCRA Pond Post-Closure Plans were not exceeded, yet phosphine (PH3) was released from conduits in the closed ponds at levels that EPA determined represented potential threats to workers performing post-closure monitoring at the ponds. The *Assessment Study Work Plan* presents a detailed discussion of the numerous EPA-FMC meetings, FMC submittals, EPA comments and FMC revised documents that led to the Final *Assessment Study Work Plan*. The meetings and deliverables are summarized below:

- EPA-FMC meeting on December 15, 2009 to discuss amendment of the RCRA Post-Closure Plans to include routine PH3 monitoring;
- EPA issuance of Shaw Environmental, Inc.'s draft report entitled "*Independent Review of Phosphine Issues Related to Pond 16S*" (Shaw, 2010);
- FMC submitted a *Draft Pond 16S Amended RCRA Post-Closure Plan* (MWH, 2010) in April 2010 that included a proposed one-year gas monitoring study;
- EPA issued the "RCRA Pond" UAO on June 14, 2010 that included in part "development and implementation of a plan to monitor the air for releases at Ponds 8S, 8E, 9S, 11S, 12S, 13S, 14S, 15S, 17 and 18 (collectively referred to as the RCRA ponds) and at the facility boundary."
- EPA issued comments to the *Draft Pond 16S Amended RCRA Post-Closure Plan* on June 18, 2010 that included extensive comments on the gas monitoring and one-year study program;
- FMC and EPA met on July 14, 2010 and convened a follow-up conference call on July 19, 2010 to discuss a path forward for amendment of the *Draft Pond 16S Amended RCRA Post-Closure Plan* and conducting the one-year PH3 study program;
- FMC submitted a "unified" amended *RCRA Pond Post-Closure Plan* (MWH, 2010a) on September 17, 2010, reserving the sections for PH3 monitoring and gas extraction and treatment pending the results of a one-year PH3 monitoring study period;

- During May 2010, EPA directed FMC to perform a site-wide gas assessment at specific CERCLA Remedial Areas (RAs) and RCRA ponds;
- On July 9, 2010, EPA approved FMC's *SRI Work Plan for the FMC Plant Operable Unit, Field Modification #15, Site-Wide Gas Characterization* ("*Site-Wide Gas Characterization Work Plan*," MWH, 2010b);
- FMC submitted the *Site-Wide Gas Assessment Report for the FMC Plant Operable Un*it ("*Site-Wide Gas Characterization Report*," MWH, 2010c) during October 2010;
- EPA issued a letter that specified the modifications to the RCRA Pond UAO SOW to incorporate a PH3 assessment study on October 26, 2010;
- FMC submitted the RCRA Pond Phosphine Assessment Study Work Plan ("*Draft Assessment Study Work Plan*", MWH 2010d) on November 1, 2010;
- FMC received draft comments from EPA on December 12, 2010 and provided preliminary responses to EPA's draft comments on December 17, 2010;
- FMC submitted the Supplemental Information on the Phosphine Assessment Study Work Plan Design and Data Evaluations to Meet the RCRA Pond UAO Task 1A Objectives (MWH, 2011b) on February 3, 2011 and participated in a conference call to review this information on March 7, 2011;
- FMC submitted an Addendum to the Draft Assessment Study Work Plan ("*Assessment Study Addendum*," MWH 2011c) on April 1, 2011;
- FMC received comments on the Assessment Study Addendum during a conference call with EPA on June 8, 2011;
- EPA issued a letter on June 13, 2011 providing contingent approval of a revised version of the Draft Assessment Study Work Plan; and
- On July 15, 2011, FMC submitted the Final *Assessment Study Work Plan* that incorporated all of the changes identified in the contingent approval.

1.2 STUDY OBJECTIVES

As specified in EPA's October 26, 2010 modification to the RCRA Pond UAO SOW addendum, the objectives of the Assessment Study were to collect, assemble and evaluate:

> *"the data and information needed to: 1) demonstrate where and how frequently monitoring should be conducted at each of the RCRA ponds to protect human health and the environment, and 2) to determine the phosphine concentrations which if met or exceeded would trigger additional monitoring and/or phosphine gas extraction and treatment to protect human health and the environment."*

1.3 SCOPE AND ORGANIZATION OF REPORT

The majority of the monitoring under the R*CRA Pond UAO – SOW Task 1 – Air Monitoring Plan – Part I and Part II* ("*Air Monitoring Plan,"* MWH, 2011), Interim Work Plans for Gas Extraction and Treatment and the *Assessment Study Work Plan* commenced in October 2010 and continued with EPA-approved additions and modifications described in Section 2.0 below through the date of this report. As specified in the *Assessment Study Work Plan*, after completion of the one-year study (i.e., completion of November 2011 monitoring) the monitoring data will be evaluated and compiled within a *RCRA Pond Phosphine Assessment Report* that will be submitted within 45 days of completion of monitoring.

This Assessment Study Report presents an evaluation of the data and recommendations regarding: 1) where and how frequently monitoring should be conducted at each of the RCRA ponds to protect human health and the environment, and 2) the PH3 concentrations at specified monitoring locations that if met or exceeded would trigger maintenance activity(ies), additional monitoring and/or PH3 gas extraction and treatment to protect human health and the environment. All relevant sampling and monitoring results through January 13, 2012 have been included in the evaluation including data from the following:

- Pond 16S monitoring and data collected prior to completion of the gas extraction and treatment system (GETS) operation pursuant to the Pond 16S UAO;
- The results for RCRA Ponds reported in the *Site-Wide Gas Assessment Report*;
- Monitoring and GES operation data for Pond 15S prior to and after approval of the *Pond 15S Interim Work Plan for Gas Extraction and Treatment*;
- Monitoring and GES operation data for Pond 17 prior to and after approval of the *Pond 17 Interim Work Plan for Gas Extraction and Treatment*;
- Monitoring pursuant to the *Air Monitoring Plan*;
- Monitoring results collected pursuant t*o the Assessment Study Work Plan*; and,
- Monitoring and GES operation data for Pond 18A prior to and after approval of the *Pond 18A Summary Interim Work Plan for Gas Extraction and Treatment* (MWH, 2011d).

The monitoring programs under the *Air Monitoring Plan*, Interim Work Plans for Gas Extraction and Treatment and *Assessment Study Work Plan* are summarized in Section 2.0. The monitoring results are presented in Section 3.0. An evaluation of the monitoring results is presented in Section 4.0 and recommendations for future phosphine monitoring at the RCRA Ponds are presented in Section 5.0.

2.0 SUMMARY OF MONITORING PROGRAMS

FMC performs an extensive PH3 monitoring program under the RCRA Pond UAO. The monitoring elements and timeline of the RCRA Pond UAO and Assessment Study work plans are summarized in Sections 2.1 and 2.2, respectively.

2.1 RCRA POND UAO PHOSPHINE MONITORING

FMC commenced PH3 monitoring at the RCRA ponds pursuant to the requirements of the RCRA Pond UAO and EPA's letter dated July 9, 2010, which clarified that the UAO and its Statement of Work (SOW) had an effective date of July 12, 2010. The RCRA Pond UAO PH3 monitoring is detailed in the following plans submitted pursuant to that order:

Air Monitoring Plan

Air monitoring began in October 2010 under the *Air Monitoring Plan* (and progeny) as follows:

- *Air Monitoring Plan* that superseded and incorporated activities and monitoring included in the following earlier plans:
    - *RCRA Pond UAO – SOW Task 1 Air Monitoring Plan* (MWH, 2010f);
    - *Interim Facility Boundary Monitoring Plan* (MWH, 2010g); and
    - *RCRA Pond UAO SOW Plan Framework for Facility Boundary Monitoring* (MWH, 2010h).

The monitoring elements under the Air Monitoring Plan consist of:

- Pursuant to the *Air Monitoring Plan – Part I*:
    - Pond perimeter surface scan;
    - Contingent pond cap surface scan (one-time sampling if pond perimeter surface scan detects PHs at 0.05 ppm or above);
    - Outside pond appurtenance air release monitoring (including TMP enclosures, ET cap drainage sumps, LCDRS sumps, instrument panels[1], and perimeter standpipes);
    - Pond appurtenance leak detection monitoring (including same appurtenances as listed above); and
    - Contingent low-lying areas (a one-time sampling if triggered by any surface scan PH3 detection of ≥ 0.05 ppm or a pond appurtenance air release PH3 detection of ≥ 0.3 ppm).

[1] "Instrument panel" is a generalized term for the steel enclosures that house (1) pressure and temperature data displays / recording modules, (2) pressure and temperature system audible / visual alarms if separate from the data display housing and (3) power supply / switches associated with post-closure monitoring systems at the RCRA ponds.

- Pursuant to the *Air Monitoring Plan – Part II*:
  - Routine 4-hour property boundary air monitoring at thirteen (13) fenceline locations (that was discontinued after March 27, 2011 as no off-plant monitoring was ever triggered);
  - Contingent additional fenceline air monitoring at nine (9) fenceline locations along the northern property boundary;
  - Contingent offsite air monitoring at five (5) locations along Highway 30; and
  - Continuous air monitoring at the perimeter of the RCRA Ponds that require gas extraction and treatment pursuant to the RCRA Pond UAO.

The timeline and status of monitoring pursuant to the *Air Monitoring Plan – Part I* is summarized below:

	Cap Perimeter Surface Scan and Appurtenance Monitoring[1]			
Pond	**Frequency**	**Initiated**	**End of 1st Year**	**Current Frequency**
8E	Monthly	Oct 2010	Sep 2011	Quarterly
15S	Monthly	Oct 2010	Sep 2011	Quarterly[2]
17	Monthly	Oct 2010	Sep 2011	Quarterly
18A	Monthly	Oct 2010	Sep 2011	Quarterly
8S	Quarterly	4Q2010	3Q2011	Annually
Phase IV	Quarterly	4Q2010	3Q2011	Annually
9E	Quarterly	4Q2010	3Q2011	Annually
16S (perim < 2,000)	Quarterly	4Q2010	3Q2011	Annually
16S (perim ≥ 2,000)	Monthly	NA	NA	NA

1 Appurtenance monitoring includes air release (breathing zone) and leak detection, contingent cap surface and/or low-lying areas monitoring would be on same schedule if triggered.

2 Perimeter surface scan and appurtenance monitoring at northwest corner of Pond 15S pursuant to schedule in *15S Interim Work Plan Addendum A* (MWH, 2011j).

The timeline and status of monitoring pursuant to the *Air Monitoring Plan – Part II* is summarized below:

Monitoring	Initiated	Ended	Status
Routine 4-hour property boundary	6/28/2010	3/27/2011	Discontinued as no off-plant monitoring was ever triggered.
Contingent fenceline	6/28/2010	NA	Currently in effect if triggered.
Continuous pond perimeter			
15S	09/27/2010	NA	Monitoring at 4 stations in progress.
17	10/14/2010	2/14/2011	Ended after 2nd month of compliance demonstration.
18A	2/14/2011	12/5/2011	Suspended[1].

1 Pond 18A continuous pond perimeter monitoring was suspended pursuant to the Pond 18A Monitoring and Alternative GES Plan submitted on December 1, 2011.

Interim Gas Extraction Plans

Although each of these plans was developed to meet specific requirements of the RCRA Pond UAO, collectively with the *Air Monitoring Plan* the overall program provides extensive monitoring of the RCRA Ponds.

- *Pond 8E Interim Work Plan Gas Extraction and Treatment* (MWH, 2010e) and revision pursuant to EPA comments issued on November 1, 2010;
- *Pond 15S Interim Work Plan Gas Extraction and Treatment* (MWH, 2010i), *RCRA Pond 15S Preliminary Final Design Analysis Report* (MWH, 2011e) and *15S Interim Work Plan Addendum A*; and
- *Pond 17 Interim Work Plan Gas Extraction and Treatment* (MWH, 2010j), *Pond 17 Interim Progress Report on Gas Extraction and Treatment and Commencement of Demonstration Period* (MWH, 2011a) and *RCRA Pond 17 Final Progress Report on Gas Extraction and Treatment* (MWH, 2011f).

The monitoring specific to the Interim Work Plans is summarized below:

Pond	Monitoring	Sampling Points
8E	Soil Gas	9
	Perimeter Pipe	1
15S	Soil Gas[1]	15 / 8 / 3
	Perimeter Pipe	2[2]
	TMP	10[3]
17	Soil Gas	11
	Perimeter Pipe	4
	TMP	6[3]

1 Shallow / step-outs / northwest corner (former west standpipe) excavation soil gas sampling points. The eight step-outs were installed pursuant to the *Assessment Study Work Plan* during week of July 18, 2011 and monitoring commenced July 27/28, 2011. Northwest soil gas probes 1.5 and 1.5A installed during week of November 7, 2011 and monitoring commenced November 14, 2011; probe 1.5P installed December 19, 2011 and monitoring commenced December 21, 2011.

2 The piping leading from the Pond 15S west standpipe to the perimeter pipe was determined to be irreparable during attempted maintenance on November 2-3, 2011 and was not accessible for extraction or monitoring after November 2, 2011.

3 All TMPs will be monitored unless gas flow cannot be established.

The timeline and status of monitoring pursuant to these plans is summarized below:

Pond	Monitoring	Frequency	Start Monitoring	Start Demo	End	Notes
8E	Soil Gas	Quarterly	4Q2010	Oct-10	Sep-11	Perimeter pipe remained below 2,000 ppm, demonstration period ended September 2011.
	Perim Pipe	Monthly	Oct-10	Oct-10	Sep-11	
15S	Soil Gas	Monthly[1]	Oct-10	NA	NA	Gas extraction in progress at east standpipe and TMP-02.
	Perim Pipe	Monthly[2]	Oct-10	NA	NA	
	TMP[3]	Monthly[2]	Oct-10	NA	NA	
17	Soil Gas	Quarterly[4]	Oct-10	Jan-11	Dec-11	Compliance demonstration period ended December 2011.
	Perim Pipe	Monthly	Oct-10	Jan-11	Dec-11	
	TMP	Quarterly[4]	Oct-10	Jan-11	Dec-11	

1 Soil gas monitoring at northwest corner of Pond 15S pursuant to schedule in *15S Interim Work Plan Addendum A* (MWH, 2011g).

2 Monthly average based on process data at the east perimeter piping standpipe and TMP-02 that are connected to GES units.

3 If extraction gas flow cannot be achieved at a TMP through typical operational actions, sampling will not be performed at that TMP.

4 Quarterly soil gas and TMP monitoring per Pond 17 Final Progress Report (5-16-11) approved by EPA on 6-16-11.

The interim gas extraction plans for Ponds 15S and 17 also include(d) operational monitoring for the gas extraction and treatment system (GES) units consisting of GES tailgas and perimeter pipe (source) gas monitoring. The GES tailgas PH3 monitoring is not included in this report as that GES operational data is not relevant to the assessment study objective. During the GES operational phase, ongoing operational data from the GES units was collected and used to calculate and track the PH3 concentration in the perimeter piping. During the demonstration phase, a sample of GES inlet gas will be (was) measured once per month using the calibrated dilution manifold box method. The timing and status of GES unit operations at these ponds is summarized below:

POND 15S

- A GES unit was deployed on Pond 15S TMP #1 (PH3 concentration of approximately 150,000 ppm) for one day in May 2010.
- A GES unit was deployed on Pond 15S TMP #2 for 26 days in June 2010. TMP #2 PH3 concentration at that time stabilized at approximately 150,000 ppm.
- A GES unit was deployed on Pond 15S TMP #5 (concentration of approximately 140,000) for 14 days in May - June 2010.
- GES Unit #1 and #2 started up on April 16, 2010, extracting from the east perimeter standpipe on Pond 15S.
- GES Unit #3 and GES Unit #4 were started up extracting gas from the Pond 15S west perimeter standpipe on May 11, 2010 and May 14, 2010 respectively, but due to highly variable concentrations did not operate continuously on the west perimeter standpipe until June 2010.
- GES Units #9 and #10 were deployed on the east and west standpipes, respectively, on October 27, 2010.
- On January 27, 2011, GES #5 was moved (from Pond 17) to the Pond 15S west standpipe.
- On February 1, 2011, GES #6 was moved (from Pond 17) to the Pond 15S east standpipe. At that time, there were four (4) GES units extracting from both the east and west standpipes at Pond 15S, for a total of eight (8) GES units operating at Pond 15S.
- On November 1, 2011, GES units #3, 4, 5 & 10 connected to the west standpipe were shut down for maintenance to the gas extraction piping leading to the standpipe. As documented in the *15S Interim Work Plan Addendum A,* the piping was not repairable and the west units were subsequently connected to extract from TMP #2.
- On December 8, 2011 GES units #3, 4, 5 & 10 began extracting from TMP #2.
- There are currently four (4) GES units extracting from the east standpipe and four (4) GES units extracting from TMP #2, for a total of eight (8) GES units operating at Pond 15S.

POND 17

- FMC installed and started operation of four GES units on the four perimeter piping standpipes of Pond 17 on October 14, 2010.
- Based upon operational measurements of gas extracted from the perimeter piping system, Pond 17 had achieved the UAO performance objective target of 2,000 ppm PH3 in perimeter piping at the end of December 2010.
- The initial perimeter piping demonstration sampling in January 2011 confirmed that the PH3 concentration in the extracted gas from the perimeter piping was below the UAO performance objective target of 2,000 ppm and the 12-month demonstration phase began.
- Ceased continuous operation of GES Units #5, 6, and 8 on January 18, 2011, and continued to operate Unit #7 which was sufficient to maintain perimeter concentrations below the UAO performance objective of 2,000 ppm PH3 in the perimeter piping.
- On December 14, 2011, successfully completed the 12th continuous month of performance objective compliance monitoring and GES unit #7 was shut-off on December 15, 2011.

2.2 PHOSPHINE ASSESSMENT STUDY MONITORING

The *Assessment Study Work Plan* was designed to fill specific gaps in the overall RCRA Pond UAO PH3 monitoring programs and create a comprehensive basis for the one-year assessment study. The *Assessment Study Work Plan* monitoring included the following monitoring activities that were additive and complementary to the other RCRA Pond UAO monitoring plans:

- TMP PH3 sampling: Monthly PH3 sampling at Pond 16S at all eight TMPs (provided extraction flow can be established at each TMP using standard operational and sampling procedures) was performed by restarting the GETS to collect measurements of extracted gas from each TMP.
- Perimeter gas collection piping PH3 sampling: Bi-monthly (twice per month) PH3 sampling was performed using a mobile GES to extract gas from the perimeter piping standpipes at Pond 16S and Pond 18A that were not otherwise connected to an operating GES unit.
- Perimeter shallow soil gas sampling: Monthly sampling was performed at the shallow (18-24 inches at 5 feet outside cap liner anchor trench) perimeter soil gas probes at Ponds 16S and 18A.
- Perimeter step-out soil gas sampling: Perimeter step-out soil gas sampling for PH3 was performed at Pond 15S and at Pond 18A: 1) 20 feet out from the cap anchor trench and at a depth to monitor the elevation of the top of pond liner (depth is pond-specific) at selected shallow soil gas probe locations, and 2) 20 feet out from the cap anchor trench along both sides of each cap drainage underground drainpipe at a depth of the centerline of the underground drainpipe. These step-out soil gas locations were monitored at the same frequency and schedule as perimeter shallow soil gas probes.

- Inside pond appurtenances: Monthly PH3 sampling was performed inside all pond appurtenances at Ponds 15S, 16S and 18A in conjunction with the appurtenance monitoring performed pursuant to the *Air Monitoring Plan*.
- Perimeter piping GOPCs: All perimeter gas collection piping standpipes at all of the RCRA ponds (Ponds 8S, 8E, 9E, Phase IV, 15S, 16S, 17 and 18A) were sampled for GOPCs (HCN, H2S, and HF) once in the second quarter and once in the third quarter of 2011.

In addition to the monitoring specified in the *Assessment Study Work Plan*, the plan also incorporated the *Pond 18A Interim Gas Extraction Plan* (Figure 2-2 in the *Assessment Study Work Plan*), the *Pond 18A Enhanced Monitoring and Alternative Gas Extraction Plan* (MWH, 2011h), and the *Pond 18A Monitoring and Alternative Gas Extraction Plan (MWH, 2011*i).

The assessment study sampling locations at Ponds 8S, 8E, 9E, Phase IV, 15S, 16S, 17 and 18A are shown on Figures 2-1 through 2-, respectively.

The additional soil gas, perimeter pipe standpipe and TMP monitoring specific to the *Assessment Study Work Plan* and *Pond 18 Monitoring and Alternative Gas Extraction Plan* is summarized below:

Pond[1]	**Monitoring**	**Sampling Pts**	**Start Monitoring**	**Study Frequency**
18A	Soil Gas[2]	10 / 8	Oct-10	Monthly
	Perim Pipe	2	Dec-10	Bi-monthly
16S	Soil Gas	14	Dec-10	Monthly
	Perim Pipe	4	Oct-10	Bi-monthly
	TMP	8	Nov-10	Monthly

1 The eight step-out soil gas sampling points that were installed at Pond 15S pursuant to the *Assessment Study Work Plan* are not presented again here (see Section 2.1, inset table for monitoring specific to the Interim Work Plans).

2 Shallow / step-out soil gas sampling points. Step-outs installed during week of April 25, 2011 and monitoring commenced May 4, 2011.

The Pond 18A Summary Interim Work Plan included in the *Phosphine Assessment Work Plan* included operational monitoring for the GES unit consisting of GES tailgas and perimeter pipe (source) gas monitoring. The GES tailgas PH3 monitoring is not included in this report as that GES operational data relates to treatment system performance and process control, rather than pond gas concentrations, and thus is not relevant to the assessment study objective. During the GES operational phase, ongoing operational data from the GES units was collected and used to calculate and track the PH3 concentration in the perimeter piping. The timing and status of GES unit operation at Pond 18A is summarized below:

- Began gas extraction and treatment with one GES unit connected to the east standpipe at Pond 18A on March 1, 2011.

- Operation of the one GES unit at Pond 18A east perimeter standpipe was suspended on October 5, 2011 pursuant to the Pond 18A Summary Interim Work Plan included in the *Phosphine Assessment Work Plan* and monitoring continued under the *Pond 18A Enhanced Monitoring and Alternative Gas Extraction Plan* and in December 2011 under the *Pond 18A Monitoring and Alternative Gas Extraction Plan*.

The results of the RCRA Pond UAO and Phosphine Assessment Study monitoring are presented in Section 3.0.

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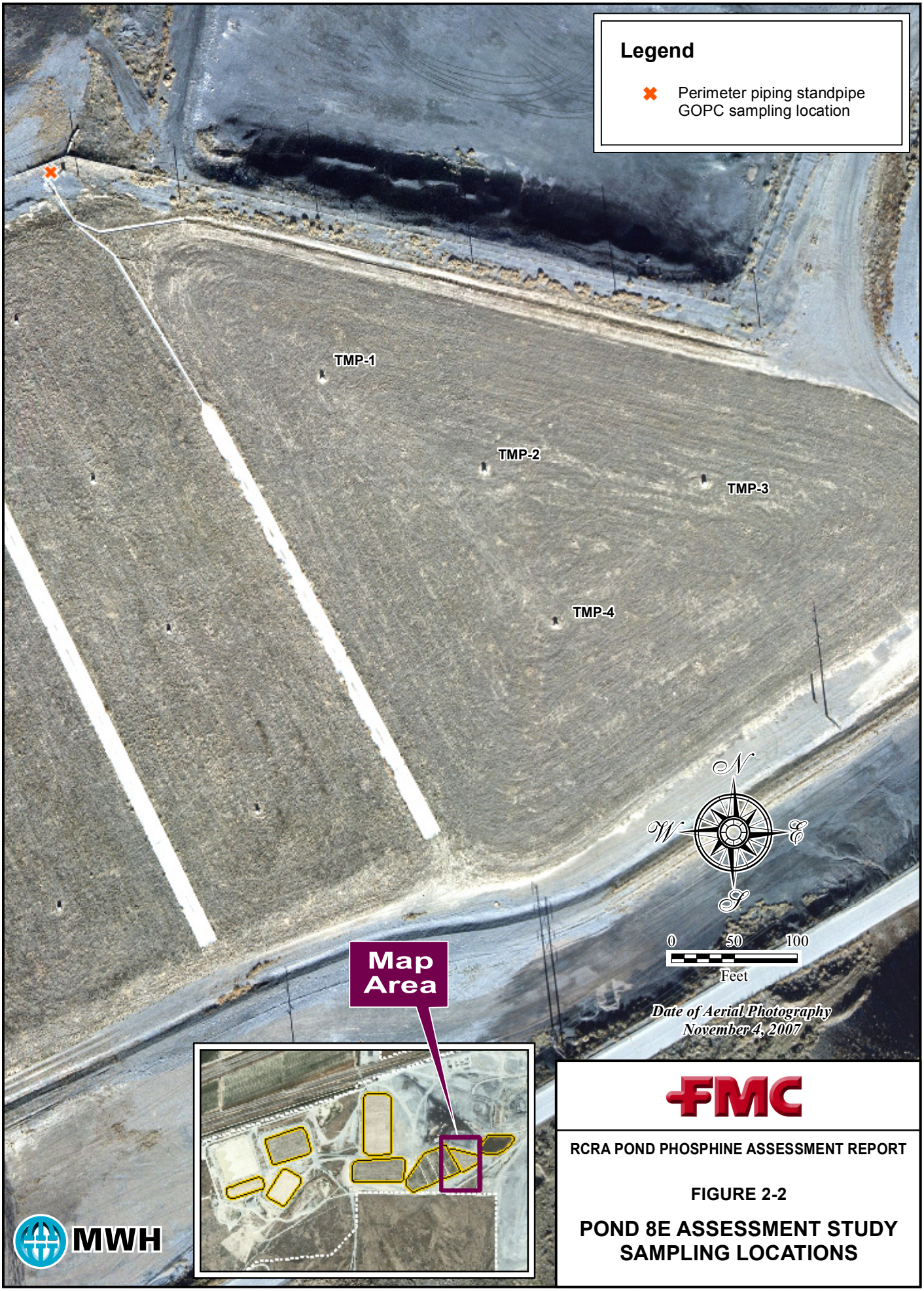
FMC

RCRA POND PHOSPHINE ASSESSMENT REPORT

FIGURE 2-1

POND 8S ASSESSMENT STUDY
SAMPLING LOCATIONS

FILE Fig 2-1_FMC_Pond8S_Phos Assess Report.mxd 30Jan2012



FMC

RCRA POND PHOSPHINE ASSESSMENT REPORT

FIGURE 2-2

POND 8E ASSESSMENT STUDY
SAMPLING LOCATIONS

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FILE Fig 2-2_FMC_Pond 8E_Phos Assess Report.mxd 30Jan2012

FMC

RCRA POND PHOSPHINE ASSESSMENT REPORT

FIGURE 2-3

POND 9E ASSESSMENT STUDY SAMPLING LOCATIONS

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FILE Fig 2-3_FMC_Pond9E_Phos Assess Report.mxd 30Jan2012

FILE *Fig 2-4_FMC_Phase IV Ponds_Phos Assess Report.mxd 30Jan2012*

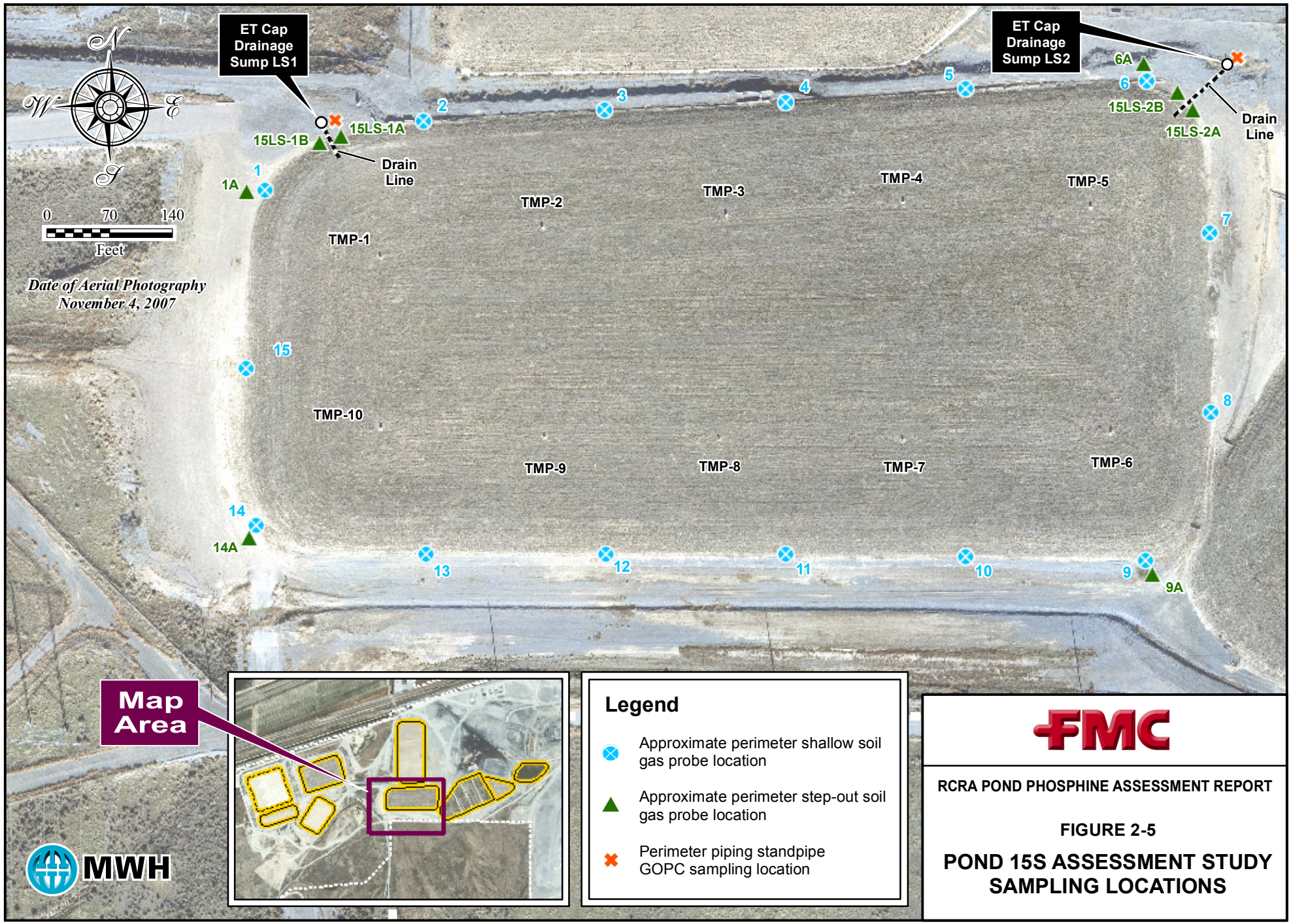
FMC

RCRA POND PHOSPHINE ASSESSMENT REPORT

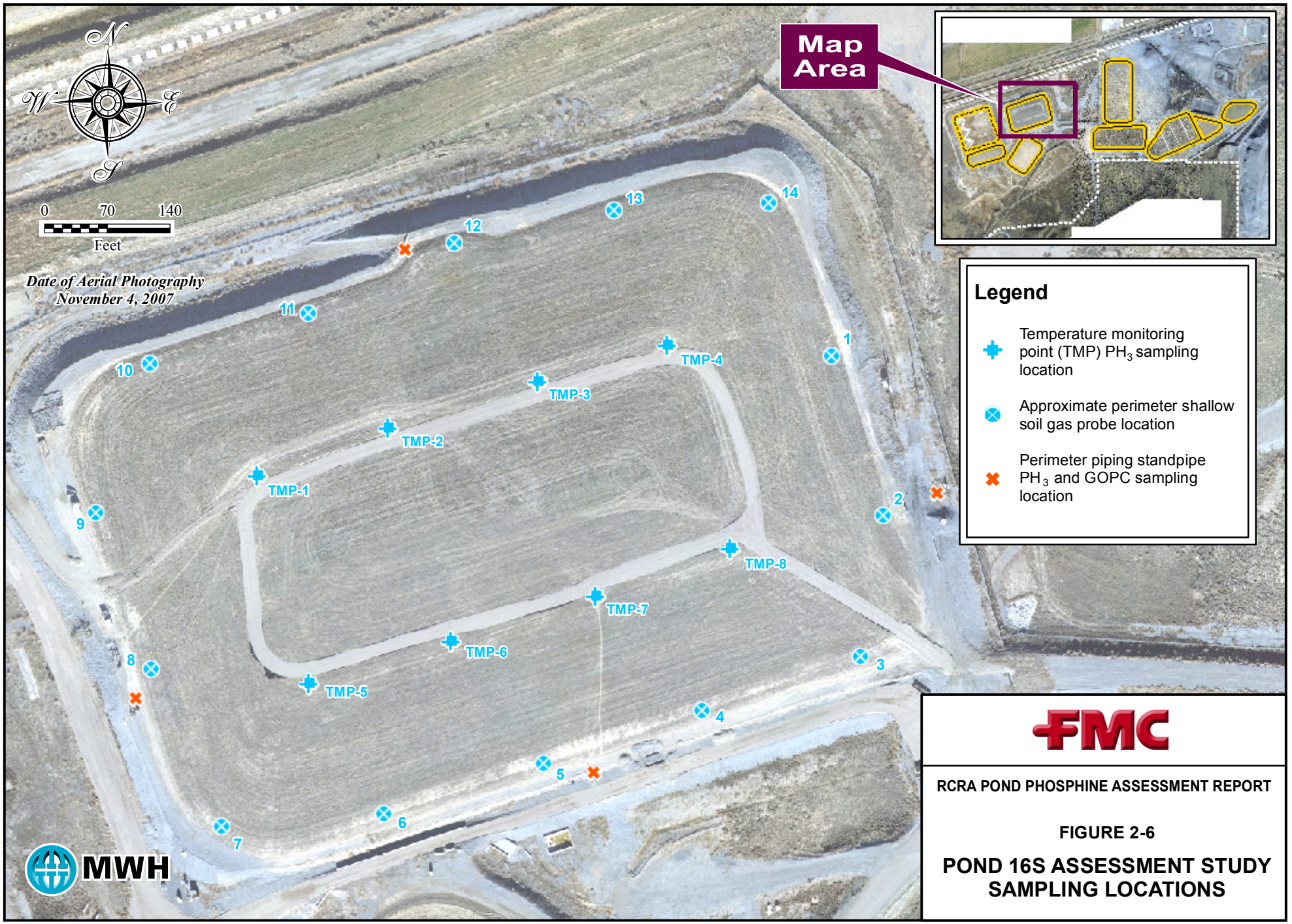
FIGURE 2-4

PHASE IV PONDS ASSESSMENT STUDY SAMPLING LOCATIONS

FILE *Fig 2-5_FMC_Pond15S_Phos Assess Report.mxd 30Jan2012*

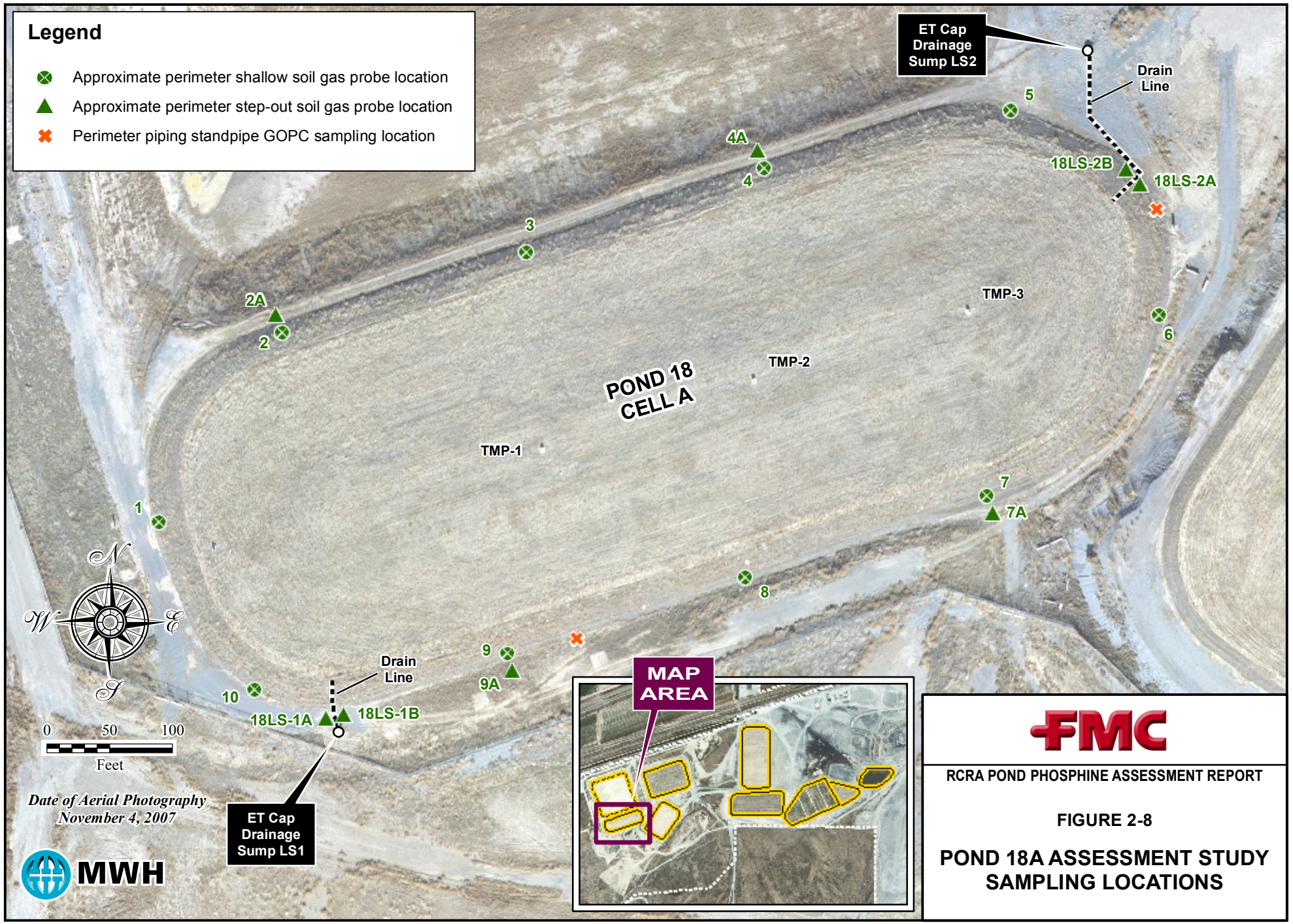


FILE *Fig 2-6_FMC_Pond16S_Phos Assess Report.mxd 30Jan2012*



FILE Fig 2-7_FMC_Pond17_Phos Assess Report.mxd 30Jan2012

FILE *Fig 2-8_Pond 18_Sampling Locs_Phos Assess Report.mxd 30Jan2012*



FMC

RCRA POND PHOSPHINE ASSESSMENT REPORT

FIGURE 2-8

POND 18A ASSESSMENT STUDY SAMPLING LOCATIONS

3.0 RESULTS OF MONITORING

The results of the monitoring and sampling performed during the site-wide gas assessment were presented in the *Site-Wide Gas Assessment Report*. The site-wide assessment monitoring results for the RCRA Ponds are summarized in the tabulated results for monitoring that was performed pursuant to the RCRA Pond UAO. The *Air Monitoring Plan* (and predecessor documents), Interim Work Plans for Extraction and Treatment (and addenda documents) and *Assessment Study* monitoring results have been previously submitted electronically to EPA in the weekly and monthly RCRA Pond UAO reports through December 2011. The monitoring results through January 13, 2012 that will be reported with the full January 2012 monthly report are summarized in this section. In order to complete the evaluations in this report, monitoring results through January 13, 2012 were used for the data evaluations presented in Section 4.0. The monitoring results for the programs common to the RCRA ponds are summarized in Sections 3.1 and 3.2, followed by RCRA pond-specific monitoring results in Sections 3.3 through 3.7.

3.1 SUMMARY OF FENCELINE / BOUNDARY MONITORING

Following final closure of all of the RCRA ponds, facility fenceline (or boundary) phosphine (PH3) monitoring has been conducted in one form or another since April 13, 2008, when daily traverses of the fence line downwind of Pond 16S commenced. During the daily traverse, FMC's contractor personnel carried a Draeger Pac III PH3 monitor with the low alarm set at 0.20 ppm and would report a PH3 reading if the monitor alarm sounded (e.g., readings above 0.20 ppm PH3). The daily Pond 16S fenceline monitoring was extended toward the east to monitor downwind of Pond 15S in April 2010. The "extended" Pond 15S fenceline monitoring continued until June 28, 2010 when FMC began implementation of the *Interim Facility Boundary Monitoring Plan* (per *Pond Management Plan*[2] [FMC, 2004] initially, and then July 19, 2010 plan followed by the revised August 6, 2010 plan). The Pond 16S fenceline monitoring continued until receipt of EPA's July 28, 2010 letter, which stated that FMC may discontinue the fenceline monitoring required under the Pond 16S UAO (in favor of the *Interim Facility Boundary Monitoring Plan*). During the 27 months of fenceline monitoring under these procedures, which included approximately **830** PH3 fenceline monitoring events, no PH3 detections were recorded at the facility fenceline, let alone at levels that would have triggered Highway 30 Offsite Monitoring pursuant to the *Pond Management Plan*. There were no PH3

[2] FMC initially implemented the fenceline monitoring provisions specified in the 2004 Pond Management Plan (PMP, February 2004) submitted to and approved by EPA pursuant to the RCRA Consent Decree. The 2004 PMP specified that PMP requirements would terminate at each pond either when closure activities began pursuant to its EPA approved closure plan or when FMC certified that closure had been completed. All of the PMP requirements terminated as of transmittal of the Pond 17 and 18 closure certifications (the final two RCRA pond closures) to EPA on December 21, 2005.

detections at the facility fenceline even during times of initial start up of the Pond 16S GETS, when there were instances of PH3 detections in the "tailgas" during upset conditions.

Air monitoring at the facility boundary pursuant to the procedures in the *Interim Facility Boundary Monitoring Plan* commenced on June 28, 2010 to monitor breathing zone concentrations at twelve (12) monitoring stations. On July 16, 2010, additional monitoring was incorporated into that program to include an additional "ground-level" measurement (approximately 4 to 6 inches above ground surface) at each monitoring station. On August 3, 2010, FMC began monitoring at the thirteen (13) fenceline monitoring stations specified in the August 6, 2010 revision of the *Interim Facility Boundary Monitoring Plan.* From the June 28, 2010 commencement of the interim facility boundary monitoring through December 31, 2010, a total of approximately **40,900** breathing zone and ground level fenceline readings were made every 4 hours, 7 days a week. From the June 28, 2010 commencement of the interim facility boundary monitoring through March 27, 2011, all breathing zone and ground level fenceline readings were **0.00** ppm PH3 (i.e., there were no detections at the fenceline during the 6 months of required routine facility boundary monitoring). Pursuant to the provisions of the *Air Monitoring Plan*, the routine 4-hour boundary monitoring was discontinued after March 27, 2011 since no off-plant monitoring was triggered. However, the requirements for contingent fenceline monitoring have remained in effect.

Contingent fenceline monitoring is triggered by the following:

- As prescribed by the *RCRA Pond Area Work Rules*, individuals (or groups) will be equipped with an industrial hygiene PH3 monitor, set to alarm at 0.3 ppm and 1.0 ppm. An alarm reading of 1.0 ppm PH3 or greater in air will trigger an immediate (within 15 minutes of such reading) round of fenceline monitoring at facility boundary monitoring sites 1 through 9.
- Any ambient air reading equal to or exceeding 1.0 ppm PH3 that is registered during RCRA pond appurtenance air monitoring (i.e., approximately 12-inches outside TMP enclosures, LCDRS manholes, cap drainage lift stations or control panels, regardless of height above ground surface) will trigger an immediate (within 15 minutes of such reading) round of fenceline monitoring at sites 1 through 9.
- Any pond perimeter continuous monitoring maximum PH3 reading in the 8-hour period that equals or exceeds 1.0 ppm PH3 and/or the 8-hour PH3 average equals or exceeds 0.3 ppm PH3 will trigger an immediate (within 15 minutes of such reading) round of fenceline monitoring at sites 1 through 9.

Since its initiation under the *Interim Facility Boundary Monitoring Plan* on June 28, 2010, contingent fenceline monitoring has only been triggered one time. As reported to EPA on November 3, 2011, during inspection of the backfill and compaction work in the excavation for

the Pond 15S west gas extraction piping maintenance work, a personnel IH monitor alarmed at 1.0 ppm PH3 while standing in the excavation. The monitor alarm triggering immediate response under the RCRA Pond Work Rules (relocate to an area where PH3 is monitored at levels below 0.3 ppm) and the *Air Monitoring Plan* (conduct contingent monitoring at the 9 northern fence line stations). All of the northern fenceline readings were 0.00 ppm PH3. An investigation of the source of the IH alarm identified the open south face of the Pond 15S west excavation. Maintenance workers were able to approach the excavation from upwind and place a bucket full of soil over that open face, after which personnel did not encounter any additional IH monitor alarms at the Pond 15S west excavation or anywhere within the RCRA Pond area. Backfill and compaction of the Pond 15S west excavation was completed on November 4, 2011.

3.2 SUMMARY OF PERIMETER PIPE STANDPIPE GOPC SAMPLING

The perimeter gas collection piping standpipes at Ponds 8S, 8E, 9E, Phase IV, 15S, 16S, 17 and 18A were sampled for GOPCs (HCN, H2S, and HF) once during the second quarter (2Q) and once during the third quarter (3Q) of 2011. Eighteen primary samples were collected: one sample for each of the GOPCs was collected from each of the single standpipes at Ponds 8S, 8E, 9E, Phase IV [11S, 12S, 13S and 14S]; from the east and west standpipes at Pond 15S; from the north, south, east and west standpipes at Pond 16S; from the north, south, east and west standpipes at Pond 17; and one from the Pond 18A south standpipe. As specified in the *Assessment Study Work Plan*, the Pond 18A east standpipe was not sampled for GOPCs because the calculated screening-level PH3 concentration was greater than 10,000 ppm at the Pond 18A east standpipe during the 2Q and 3Q 2011 GOPC sampling events. Two duplicates and two field blanks (three during the 2Q event) were also collected and analyzed for GOPCs. The 2Q perimeter pipe GOPC sampling was performed during May 11 through 23. The results are shown on Table 3.1. The 3Q perimeter pipe GOPC sampling was performed during August 8 through 18. The results are shown on Table 3.2.

3.3 PONDS 8S, 9E AND THE PHASE IV PONDS

Pond perimeter surface scans were performed at Ponds 8S, 9E and the Phase IV ponds during July/August 2010 (site-wide) and quarterly during October 2010 and March, May and August 2011, as shown on Table 3.3. Phosphine was not detected during any of the perimeter surface scans at these ponds.

Appurtenance monitoring was performed at Ponds 8S, 9E and the Phase IV ponds during July 2010 (site-wide) and quarterly during October 2010 and February, May and August 2011 as shown on Tables 3.4, 3.5 and 3.6. Phosphine was not detected during any of the appurtenance monitoring events at Pond 8S and the Phase IV ponds. Other than the very low PH3 (0.02 ppm) reported at Pond 9E LCDRS sumps 4 and 5 during August 2011, PH3 was not detected during the appurtenance monitoring events at Pond 9E.

Perimeter pipe monitoring was performed at Ponds 8S, 9E and the Phase IV during the site-wide gas assessment. Although perimeter pipe PH3 monitoring was not required at these ponds as part of the *Air Monitoring Plan* or the *Assessment Study Work Plan*, screening level PH3 concentrations were calculated during the GOPC sampling conducted during the second quarter (2Q) and third quarter (3Q) of 2011. The site-wide gas assessment and screening-level perimeter pipe PH3 concentrations for Ponds 8S, 9E and the Phase IV ponds are summarized below:

Pond	Date	PH3 concentration
8S	7/26/10	978
	5/18/11	1,043
	8/18/11	715
9E	7/27/10	0.00
	5/23/11	0.00
	8/17/11	0.00
Phase IV ponds 11S	7/29/10	15.67
	5/18/11	30
	8/16/11	29
12S	7/29/10	732
	5/19/11	1,479
	8/16/11	965
13S	7/27/10	0.06
	5/19/11	0.17
	8/17/11	0.03
14S	7/27/10	0.00
	5/23/11	0.00
	8/17/11	0.01

3.4 POND 8E

Pond perimeter surface scans were performed at Pond 8E during July/August 2010 (site-wide), monthly from October 2010 to September 2011 (except no scans could be completed during December 2010 through February 2011 due to weather conditions), and quarterly during November 2011, as shown on Table 3.3. Phosphine was not detected during any of the perimeter surface scans at Pond 8E.

Appurtenance monitoring was performed at Pond 8E during July 2010 (site-wide), monthly from October 2010 to September 2011, and quarterly during November 2011, as shown on Table 3.7. Phosphine was not detected during any of the appurtenance monitoring events at Pond 8E.

Soil gas monitoring was performed at Pond 8E during July 2010 (site-wide) and quarterly during November 2010 and February, May and August 2011, as shown on Table 3.8. Phosphine was not detected in the breathing zone during any of the soil gas monitoring events at Pond 8E. Phosphine was detected in four of the nine soil gas probes, specifically at probe 1 (detected

during 4 of the five monitoring events; maximum result was 4.33 ppm), probe 4 (detected during 1 of the five monitoring events; 0.09 ppm), probe 5 (detected during 1 of the five monitoring events; 0.05 ppm), and probe 6 (detected during 2 of the five monitoring events; maximum result was 0.16 ppm).

Pond perimeter gas collection pipe monitoring at the standpipe at Pond 8E was performed during July 2010 (site-wide) and monthly from October 2010 to September 2011, as shown on Table 3.9. The monthly perimeter pipe monitoring from October 2010 to September 2011 was for the RCRA Pond UAO performance objective demonstration. Phosphine was not detected in the breathing zone during any of the perimeter pipe monitoring events at Pond 8E. Phosphine was detected in the perimeter pipe source gas at concentrations ranging from 407 ppm (December 2010) to 1,800 ppm (July 2010).

3.5 POND 16S

Pond perimeter surface scans were performed at Pond 16S quarterly during October 2010 and February, May and August 2011, as shown on Table 3.3. Phosphine was not detected during any of the perimeter surface scans at these ponds.

Appurtenance monitoring was performed at Pond 16S quarterly during October 2010 and February, May and August 2011, as shown on Table 3.10. Phosphine was not detected during the appurtenance ambient air and leak detection monitoring events at Pond 16S. Very low PH3 was reported (0.03, 0.04 and 0.06 ppm, respectively) inside LCDRS sump 2 and cap drainage lift stations 1 and 2 at Pond 16S during the August 2011monitoring event, but PH3 was not detected inside any other appurtenances during the inside appurtenances monitoring events.

Following successful completion of the performance objective demonstration and cessation of gas extraction and treatment using the GETS at Pond 16S (and attendant soil gas monitoring under the Pond 16S UAO which is not discussed herein), soil gas monitoring was performed at Pond 16S monthly during December 2010 through January 2012, as shown on Table 3.11. Phosphine was not detected in the breathing zone or near (4 to 6 inches above) the ground surface during any of the soil gas monitoring events at Pond 16S. Of the total 196 soil gas readings (14 monitoring events at the 14 probes), 145 (74%) of the readings were 0.00 ppm PH3. The PH3 results ranged from 0.01 to 8.12 ppm for the 51 non-zero PH3 readings. Thirty nine (76%) of the 51 non-zero readings were below 0.3 ppm, six (12%) were between 0.3 and 1.0 ppm and six (12%) were above 1.0 ppm PH3.

Pond perimeter gas collection pipe monitoring at Pond 16S was performed monthly from October 2010 to February 2011, bi-monthly from March 2011 to December 2011, and in January 2012, as shown on Table 3.9. Only the south standpipe was monitored during October 2010 to January 2011. Beginning in February 2011 and thereafter, all four standpipes (north, south, east and west) were monitored. Phosphine was not detected in the breathing zone during any of the

perimeter pipe monitoring events at Pond 16S. Phosphine was detected in the perimeter pipe source gas at concentrations ranging from 0.00 ppm (at west and south standpipes) to 1,382 ppm (at north standpipe; August 2011).

Temperature monitoring point (TMP) monitoring at Pond 16S was performed monthly during December 2010 through January 2012, as shown on Table 3.12. Phosphine was not detected in the breathing zone during any of the TMP monitoring events at Pond 16S. During December 2010, PH3 concentrations ranged from 280 to 1,400 ppm in individual TMPs and averaged 760 ppm. As expected, PH3 concentrations increased (or "rebounded") over the one-year study period and, in January 2012, PH3 concentrations ranged from 1,186 to 15,530 ppm in individual TMPs and averaged 7,193 ppm. A more detailed discussion of the Pond 16S TMP, perimeter pipe and soil gas monitoring results is presented in Section 4.0.

3.6 PONDS 17 AND 18A

As described in Section 2.0, gas extraction and treatment systems (GES) were operated at Ponds 17 and 18A during the assessment study period and the GES tailgas monitoring results are not included in this report. Continuous monitoring performed at Ponds 17 and 18A during GES operation was reported to EPA in the weekly reports covering October 14, 2010 to February 14, 2011 (for Pond 17) and February 14 to December 5, 2011 (for Pond 18A) and those continuous monitoring results are not repeated in this report. None of the continuous monitoring results for Ponds 17 and 18 equaled or exceeded the maximum PH3 reading of 1.0 ppm or the 8-hour PH3 average of 0.3 ppm PH3 that would have initiate an additional round of fenceline monitoring and downloading the full 8 hours of data. As FMC has reported in the weekly UAO reports beginning on October 6, 2010 (weekly report #9), the Draeger PAC III monitors occasionally experience non-zero maximum readings during the 8-hour continuous monitoring periods that are not detections of phosphine (PH3). Pursuant to EPA's request during the June 15, 2011 conference call, FMC initiated a more detailed evaluation of Draeger monitor data from the Pond 18A continuous monitoring station 18A-3 and submitted the results of that evaluation to EPA on July 8, 2011. A copy of the "Evaluation of Logged Non-Zero Maximum Readings using Draeger Pac III Phosphine Monitors at Pond 18A Continuous Monitoring Station 3" is included as Appendix A to this report. Consistent with FMC's experience and Draeger's technical specifications, the evaluation found the Draeger Pac III monitors equipped with the XS Hydride sensor for PH3 detection are well suited for field use but are also very sensitive to cross-interferences and low-voltage electronic effects.

Pond perimeter surface scans were performed at Ponds 17 and 18A during July/August 2010 (site-wide) and monthly from October 2010 to September 2011 (except no scans could be completed during January 2011 due to weather conditions). Quarterly monitoring was performed at Pond 17 during November 2011 and bi-monthly monitoring was performed at Pond 18A during October and November 2011, as shown on Table 3.3. The planned December

monthly monitoring at Pond 18A could not be completed due to weather conditions. Monthly monitoring at Pond 18A was completed in January 2012. Phosphine was not detected during any of the perimeter surface scans at Ponds 17 and 18A.

Appurtenance monitoring was performed at Ponds 17 during July 2010 (site-wide) and monthly from October 2010 to November 2011, as shown on Table 3.13. Phosphine was not detected during any of the appurtenance monitoring events at Pond 17.

Appurtenance monitoring was performed at Ponds 18A during July 2010 (site-wide) and monthly from October 2010 to January 2012, as shown on Table 3.14. Phosphine was not detected during the appurtenance ambient air and leak detection monitoring events at Pond 18A, with the exception of PH3 detected during leak detection monitoring at the base of TMP #3 in February 2011. After re-compacting soil around the base, PH3 was not detected at the base of TMP #3 during February re-monitoring or subsequent events. Phosphine was detected at 0.10 ppm inside TMP #3 in June 2011. After tightening the flange, PH3 was not detected inside TMP #3 during June re-monitoring or subsequent events. Phosphine was reported at 1.60, 0.04 and 0.03 ppm inside cap drainage lift station 1 (LS-01) at Pond 18A during the May, June and October 2011monitoring events. Other than TMP #3 and LS-01, PH3 was not detected inside any other appurtenances during the inside appurtenances monitoring events.

Soil gas monitoring was performed at Pond 17 during July 2010 (site-wide), monthly during October 2010 through June 2011, and quarterly during August and November 2011, as shown on Table 3.15. Phosphine was not detected in the breathing zone during any of the soil gas monitoring events at Pond 17. Phosphine was detected in all eleven soil gas probes during the July and October 2010 monitoring events conducted prior to initiation of GES operation at Pond 17 on October 14, 2010. Phosphine concentrations during the two pre-GES operation monitoring events ranged from 0.04 to 628 ppm. Following initiation of GES operation, PH3 concentration dropped dramatically and PH3 was not detected in the majority of the subsequent soil gas monitoring events except for sporadic, low PH3 (0.01 to 0.04 ppm) recorded at probes 1 through 9 and an apparently anomalous reading of 0.52 ppm at probe 1 during August 2011.

Shallow soil gas monitoring was performed at Pond 18A during July 2010 (site-wide), monthly during December 2010 through September 2011, bi-monthly during October and November 2011, and monthly during December 2011 and January 2012, as shown on Table 3.16. Following installation of step-out soil gas probes in April 2011, step-out soil gas monitoring was performed at Pond 18A monthly during May through September 2011, bi-monthly during October and November 2011, and monthly during December 2011 and January 2012, as shown on Table 3.16. Phosphine was not detected in the breathing zone during any of the shallow or step-out soil gas monitoring events at Pond 18A. Phosphine was detected in nine of the ten shallow soil gas probes during the July and December 2010 and January and February 2011 monitoring events conducted prior to initiation of GES operation at Pond 18A on March 1, 2011.

Phosphine concentrations during the pre-GES operation monitoring events and the March 3, 2011 monitoring event (only 2 days after GES operation began) ranged from 0.00 to over 1,000 ppm (1,000 ppm is the maximum value for the Draeger Pac III PH3 monitor with the "high range" 0 to 1,000 ppm PH3 sensor). Following initiation of GES operation, PH3 concentration dropped dramatically and PH3 was not detected in the majority of the subsequent shallow soil gas monitoring events except for sporadic, low PH3 (0.01 to 0.09 ppm) recorded at probes 1 through 6 and probe 8 and an apparently anomalous reading of 0.19 ppm at probe 2 during the October 25, 2011 monitoring event. Other than the very low PH3 readings (0.00 to 0.06 ppm) during the initial two rounds of step-out soil gas probe monitoring on May 4 and 25, 2011, PH3 was not detected in the step-out probes at Pond 18A.

Pond perimeter gas collection pipe monitoring at the southwest standpipe at Pond 17 was performed during August 2010 (site-wide) and all four standpipes were monitored monthly from October 2010 to December 2011 as shown on Table 3.9. The monthly RCRA Pond UAO performance objective demonstration monitoring was performed at the southwest standpipe (highest PH3 concentration of the four standpipes) from January to December 2011. Phosphine was not detected in the breathing zone during any of the perimeter pipe monitoring events at Pond 17. The PH3 concentration in the perimeter pipe source gas ranged from 3,329 to 18,939 ppm during October 2010 (GES operation began October 14, 2010) and had decreased to a range from 0.00 to 3.37 ppm prior to ceasing GES operation on December 15, 2011.

Pond perimeter gas collection pipe monitoring at the south standpipe at Pond 18A was performed during July 2010 (site-wide) and December 2010 and both the south and east standpipes were monitored monthly during January and February 2011 prior to initiation of GES operation connected to the east standpipe at Pond 18A on March 1, 2011. During March through September 2011, the south standpipe was monitored bi-monthly and the east standpipe GES source gas monitoring results were used as monthly readings as shown on Table 3.9. After operation of the GES unit at the east perimeter standpipe was suspended on October 5, 2011, bi-monthly monitoring was performed at the east standpipe during October through December 2011 and the south standpipe was monitored monthly during October and November and bi-monthly during December 2011. Both the east and south standpipes were monitored in January 2012. The PH3 concentrations in the south and east perimeter pipe source gas ranged from 3,464 to 7,123 ppm and 17,880 to 19,625 ppm, respectively, prior to GES operation that began on March 1, 2011. Phosphine concentrations in the south and east perimeter pipe source gas had decreased to 1,780 and 3,505 ppm, respectively, by the time GES operation was suspended on October 5, 2011. During November 2011 through January 2012, PH3 concentrations have remained in the range of 309 to 548 ppm in the south standpipe and 1,136 to 2,503 ppm in the east standpipe at Pond 18A.

Temperature monitoring point (TMP) monitoring was performed at Pond 17 during August 2010 (site-wide) and monthly during October 2010 through November 2011 as shown on Table 3.17.

Phosphine was not detected in the breathing zone during any of the TMP monitoring events at Pond 17. During October 2010, PH3 concentrations ranged from 3,042 to 30,463 ppm in individual TMPs and averaged 14,368 ppm. Following initiation of GES operation on October 14, 2010, PH3 concentration dropped dramatically to an average TMP concentration of 1,544 ppm in December 2010. During November 2011, prior to ceasing GES operation on December 15, 2011, PH3 concentrations ranged from 0.10 to 14 ppm in individual TMPs and averaged 7.05 ppm.

Temperature monitoring point (TMP) monitoring was performed at Pond 18A during the site-wide gas characterization and those results are reported in the *Site-Wide Gas Characterization Report.* No TMP monitoring at Pond 18A was included in the *Pond 18A Interim Gas Extraction Plan* or the *Assessment Study Work Plan* and thus no TMP monitoring was performed at Pond 18A during the assessment study period.

3.7 POND 15S

As described in Section 2.0, gas extraction and treatment systems (GES) were operated during the assessment study period and are currently in operation at Pond 15S. The GES tailgas monitoring results are not included in this report. Continuous monitoring performed at Ponds 15S during GES operation has been reported to EPA in the weekly reports covering September 27, 2010 to the present and those continuous monitoring results are not repeated in this report. None of the continuous monitoring results for Pond 15S to date have equaled or exceeded the maximum PH3 reading of 1.0 ppm or the 8-hour PH3 average of 0.3 ppm PH3 that would have initiate an additional round of fenceline monitoring and downloading the full 8-hours of data.

Pond perimeter surface scans were performed at Ponds 15S during August 2010 (site-wide), monthly from October 2010 to September 2011 (except no scans could be completed during January 2011 due to weather conditions), and then quarterly (initially) on November 2, 2011, as shown on Table 3.3. As described in the *Site-Wide Gas Assessment Report*, three locations were flagged due to PH3 readings during the August 2010 perimeter surface scan. As noted on the field sampling logsheet, the highest reading was found in a small (rodent) hole. The follow-up investigation of the flagged locations identified some minor, isolated areas of rodent activity and maintenance was performed by adding soil to fill the small rodent holes. A full cap scan was performed and there were no detections of PH3 from any of the sampling cells on the Pond 15S cap surface. Phosphine was not detected during any of the perimeter surface scans from October 2010 through November 2, 2011.

The initial November (quarterly) perimeter surface scan was performed on November 2, 2011, prior to initiation of the excavation in the area of the west standpipe for maintenance to the gas extraction piping leading to the standpipe. As described in Section 3.1, the piping was not repairable. During the backfill and compaction work in the excavation for the Pond 15S west gas extraction piping maintenance work on November 3, 2011, a personnel IH monitor alarmed

at 1.0 ppm PH3 while standing in the excavation. An investigation of the source of the IH alarm identified the open south face of the Pond 15S west excavation. Maintenance workers were able to approach the excavation from upwind and placed a skip-loader bucket full of soil over that open face. After that was done, personnel did not encounter any additional IH monitor alarms at the Pond 15S west excavation or anywhere within the RCRA Pond area. Backfill and compaction of the Pond 15S west excavation was completed on November 4, 2011. Following discussions with EPA, bi-weekly (twice per week) surface scans were performed along the northwest perimeter of Pond 15S in the area of the removed west piping excavation area beginning on November 16, 2011. During the November 16, 21 and 23, 2011 northwest corner surface scans, PH3 was detected. Follow-up actions at the flagged locations are described in the Comment column on Table 3.3. No PH3 was detected during the northwest corner perimeter surface scan on November 28, 2011. The December 2011 bi-weekly (first week of December 2011) and then weekly (per *15S Interim Work Plan Addendum A*) Pond 15S northwest perimeter surface scans could not be performed due to weather conditions. No PH3 was detected during the weekly Pond 15S northwest corner perimeter surface scan on January 5, 2012. The weekly Pond 15S northwest corner perimeter surface scan could not be completed during the week of January 9 to 14, 2012 due to weather / snow cover conditions.

Appurtenance monitoring was performed at Pond 15S during July 2010 (site-wide) and monthly from October 2010 to September 2011, as shown on Table 3.18. Phosphine was not detected during these appurtenance ambient air and leak detection monitoring events at Pond 15S, with the exception of leak detection monitoring at the base of cap drainage lift station 1 (LS-01) during October and November 2010 and at TMP #1 in May 2011. Phosphine was detected inside LS-01 in the range of 0.00 to 0.21 ppm and two readings of 0.03 ppm were recorded during inside appurtenance monitoring at LS-02. Very low PH3 was reported (0.02 to 0.04 ppm) inside LCDRS sumps 1 through 4 during the April and May 2011monitoring event, but PH3 was not detected inside any other appurtenances during the inside appurtenances monitoring events.

The initial November appurtenance monitoring was performed on November 10, 2011 after the west standpipe GES units had been idled and the west piping maintenance and subsequent actions described in Section 3.1 and above had been completed. Bi-weekly appurtenance monitoring was performed at Pond 15S beginning on November 16 and 17, 2011 until the first week of December on the same schedule as the northwest perimeter surface scans, and then this monitoring was performed weekly (per *15S Interim Work Plan Addendum A*). After the west standpipe GES units were idled on November 2, 2011, PH3 was not detected during the appurtenance ambient air monitoring events, but phosphine was detected during leak detection and/or inside appurtenance monitoring at TMPs #1, 2, 4, 5, 6 and 9. After tightening the TMP flanges (and replacing one gasket) and re-compacting soil at the base of TMPs #1 and 6, PH3 was not detected during confirmatory re-monitoring. Phosphine was detected inside LS-01 ranging from 0.05 to 136 ppm, inside the LS-01 instrumentation panel ranging from 0.04 to 6.20

ppm, and LS-02 ranging from 0.03 to 0.06 ppm, but PH3 was not detected during the ambient air or leak detection monitoring associated with these monitoring events. Sporadic low PH3 readings were reported (0.02 to 0.08 ppm) inside LCDRS sumps 1 through 4 during April, May, November and December 2011 and January 2012, but PH3 was not detected during the ambient air or leak detection monitoring associated with these monitoring events.

Shallow soil gas monitoring was performed at Pond 15S during July 2010 (site-wide) and monthly during December 2010 through December 2011. Step-out soil gas probes were installed during July 2011 and were added to the monthly monitoring July through December 2011. After the west standpipe GES units had been idled and the west piping maintenance and subsequent actions described in Section 3.1 and above had been completed, two additional soil gas probes were installed at the location of the backfilled west extraction piping excavation. The northwest area soil gas monitoring was conducted bi-weekly from November 15 to the first week of December 2011, and then weekly thereafter in December 2011 and January 2012 per the *15S Interim Work Plan Addendum A*. A third additional soil gas probe was added to the backfilled west piping area on December 19, 2011 and was initially monitored on December 21, 2011 and a second round of monitoring was performed on January 5, 2012. The results of the Pond 15S soil gas monitoring are summarized on Table 3.19.

Phosphine was not detected in the breathing zone or 4 to 6 inches above ground surface (added during August 2011 monitoring) during any of the shallow, step-out or west pipe backfill area soil gas monitoring events at Pond 15S.

Phosphine was detected at least once in all 15 shallow soil gas probes, at concentrations ranging from 0.01 to 592 ppm, during the July 2010 through February 2011 monitoring events. Approximately one month after all eight GES units had been in operation at Pond 15S (eight GES units operational February 1, 2011), PH3 concentration dropped steadily and PH3 was not detected in any of the shallow soil gas probes during the June 8, 2011 monitoring event. During the July through October 2011 monitoring events, only sporadic, low PH3 (0.01 to 0.02 ppm) were recorded at probes 1, 7 and 15 and an apparently anomalous reading of 0.54 ppm at probe 13 during the October 5, 2011 monitoring event. No PH3 was detected in the breathing zone, above ground surface or in the step-out soil probes during step-out soil gas monitoring July through October 2011.

After the west standpipe GES units had been idled and the west piping maintenance and subsequent actions described in Section 3.1 and above had been completed, PH3 was detected in shallow, step-out and the soil gas probes installed at backfilled west pipe excavation during the November 10 through December 27, 2011 monitoring events. The highest PH3 concentrations were recorded in shallow soil gas probe 1.5, installed five feet outside the cap anchor trench within the west pipe excavation backfill (two 1,000+ readings and a concentration of 1,106 ppm using the dilution box on December 21, 2011), and in soil gas probe 1.5P, installed 6.8 feet

below ground surface at the location of the west perimeter gas collection pipe alignment as observed in the south wall of the excavation at the maximum extent of excavation prior to backfill (concentration 3,804 ppm using the dilution box on December 21, 2011). Phosphine was also detected at concentrations greater than 20 ppm in shallow soil gas probe 2 and step –out probes 1.5A, LS-1A and LS-1B nearest to the backfilled west pipe area.

The idled west standpipe GES units #3, 4, 5 & 10 began extracting from TMP #2 on December 8, 2011. Soon after these GES units began operation, PH3 concentrations in the northwest corner soil gas probes declined to less than maximum readings during prior November / December monitoring, including probe 1.5P where PH3 concentrations dropped from 3,804 ppm during the initial monitoring on December 21, 2011 to 889 ppm during monitoring on January 5, 2012. Monitoring at the northwest area of Pond 15S will continue pursuant to the *15S Interim Work Plan Addendum A* or subsequent addenda.

Perimeter pipe data for Pond 15 from the July/August (site-wide) and monthly during October 2010 through December 2011, and through January 9, 2012, is summarized on Table 3.9. The concentrations reported for the east and west standpipes are the monthly averages calculated from the operating GES units. Gas extraction and treatment using the GES units was continuous (except for maintenance and power outages) throughout the assessment study period. The GES operational data has been reported to EPA throughout GES operation at Pond 15S and is not repeated here.

During gas extraction from TMPs #1, 2 and 5 at Pond 15S during June 2010, concentrations averaged about 150,000 ppm based on GES operational monitoring. Pond 15S TMP monitoring was performed during August/September 2010 (site-wide) and monthly during October 2010 through January 2012, as shown on Table 3.20. Phosphine was not detected in the breathing zone during any of the TMP monitoring events at Pond 15S. Although six of the TMPs had or developed flow obstructions that prevented sampling, the average phosphine concentration in the TMPs has slowly decreased to about 50,000 ppm during the November and December 2011 monitoring events and was about 76,500 ppm in January 2012 (TMP 2 value based on GES process operational average during January 5 to 9, 2012).

Table 3.1 RCRA Pond Perimeter Pipe - 2Q2011 GOPC Sample Results

Analyte		Hydrogen Sulfide			Hydrogen Cyanide			Hydrofluoric Acid			Phosphine
		H_2S			HCN			HF			PH3
Analytical Method		OSHA1008			NIOSH6010			NIOSH7903			Draeger Meter
Volume (L)		10			3			3			N/A
Molecular Weight		34.082			27.0253			20.00634			
PEL (ppm)		20/50			10			3			0.3
IDLH (ppm)		100			50			30			50
LEL (ppm)		40,000			56,000			N/A			20,000
Sample Identification	**Sample Date**	**ug/Sample**	**ug/l**	**ppm**	**ug/Sample**	**ug/l**	**ppm**	**ug/Sample**	**ug/l**	**ppm**	**ppm**
8S-PPN	5/18/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	**11**	**3.67**	**4.12**	1,043
8E-PPN	5/11/11	<3.6 B[1]	<0.36 B[1]	<0.24 B[1]	<0.21	<0.069	<0.058	**1.4**	**0.5**	**0.5**	724
8E-PPT (Field Blank)	5/11/11	<3.6 B[1]	<0.36 B[1]	<0.24 B[1]	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	NA
9E-PPN	5/23/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	0.00
9E-PPT (Field Blank)	5/23/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	NA
11S-PPN	5/18/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	**0.7**	**0.23**	**0.26**	30
12S-PPN	5/19/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	**6.1**	**2.03**	**2.28**	1,479
12S-PPN (Duplicate)	5/19/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	**5.7**	**1.90**	**2.13**	1,479
13S-PPN	5/19/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	0.17
13S-PPT (Field Blank)	5/19/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	NA
14S-PPN	5/23/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	0.00
15S-PPW	5/11/11	<3.6 B[1]	<0.36 B[1]	<0.24 B[1]	<0.21	<0.069	<0.058	**8.7**	**2.9**	**3.3**	4,816
15S-PPE	5/11/11	<3.6 B[1]	<0.36 B[1]	<0.24 B[1]	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	5,613
16S-PPE	5/11/11	<3.6 B[1]	<0.36 B[1]	<0.24 B[1]	<0.21	<0.069	<0.058	**0.98**	**0.3**	**0.4**	60
16S-PPS	5/11/11	<3.6 B[1]	<0.36 B[1]	<0.24 B[1]	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	0.21
16S-PPN	5/11/11	<3.6 B[1]	<0.36 B[1]	<0.24 B[1]	<0.21	<0.069	<0.058	**1.2**	**0.4**	**0.4**	284
16S-PPW	5/11/11	<3.6 B[1]	<0.36 B[1]	<0.24 B[1]	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	0.00
17-PPNE	5/18/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	0.96
17-PPNW	5/17/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	1.85
17-PPSE	5/17/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	2.23
17-PPSW	5/16/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	5.33
17-PPSW (Duplicate)	5/16/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	5.33
18A-PPS	5/11/11	<3.6 B[1]	<0.36 B[1]	<0.24 B[1]	<0.21	<0.069	<0.058	**9.7**	**3.2**	**3.6**	2,772
18A-PPE	5/11/11	NS[2]	NS[2]	NS[2]	NS[2]	NS[2]	NS[2]	NS[2]	NS[2]	NS[2]	16,022

Conversion from µg/l to ppm = concentration in µg/l X (22.46 / molecular weight of compound).

All GOPC primary and duplicate samples collected directly from source gas to mobile GES unit (no dilution air).

Phosphine results using Draeger meter calculated based on blended (diluted) inlet gas for Ponds 8S, 9E, 11S, 12S, 13S, 14S, 15S E and W, and 18A E and S; all others from undiluted source gas.

[1] **"B"** indicates analyte was detected in associated method blank. The reported concentration has been corrected by subtracting the method blank concentration.

[2] No GOPC sample collected, PH3 concentration was > 10,000 ppm.

Table 3.2 RCRA Pond Perimeter Pipe - 3Q2011 GOPC Sample Results

Analyte		Hydrogen Sulfide			Hydrogen Cyanide			Hydrofluoric Acid			Phosphine
		H_2S			HCN			HF			PH3
Analytical Method		OSHA1008			NIOSH6010			NIOSH7903			Draeger Meter
Volume (L)		10			3			3			N/A
Molecular Weight		34.082			27.0253			20.00634			
PEL (ppm)		20/50			10			3			0.3
IDLH (ppm)		100			50			30			50
LEL (ppm)		40,000			56,000			N/A			20,000
Sample Identification	**Sample Date**	**ug/Sample**	**ug/l**	**ppm**	**ug/Sample**	**ug/l**	**ppm**	**ug/Sample**	**ug/l**	**ppm**	**ppm**
8S-PPE	8/18/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	715
8S-PPE (Dup)	8/18/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	715
8S-PPT (Field Blank)	8/18/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	NA
8E-PPN	8/16/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	**3.1**	**1.03**	**1.16**	480
9E-PPN	8/17/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	0.00
11S-PPN	8/16/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	29
12S-PPN	8/16/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	**1.1**	**0.37**	**0.41**	965
13S-PPN	8/17/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	0.03
14S-PPN	8/17/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	0.01
15S-PPNW	8/9/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	**6.8**	**2.27**	**2.54**	2,726
15S-PPNE	8/10/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	2,649
15S-PPNE (Dup)	8/10/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	2,649
15S-PPT (Field Blank)	8/10/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	NA
16S-PPE	8/8/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	470
16S-PPS	8/8/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	52
16S-PPN	8/8/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	1,381
16S-PPW	8/8/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	0.74
17-PPE	8/15/11	**3.9**	**0.39**	**0.26**	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	0.45
17-PPN	8/15/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	0.11
17-PPS	8/15/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	6.67
17-PPW	8/15/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	0.64
18A-PPS	8/9/11	<3.6	<0.36	<0.24	<0.21	<0.069	<0.058	<0.53	<0.176	<0.198	2,800
18A-PPE	8/16/11	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	10,789

Conversion from µg/l to ppm = concentration in µg/l X (22.46 / molecular weight of compound).

All GOPC primary and duplicate samples collected directly from source gas to mobile GES unit (no dilution air).

Phosphine results using Draeger meter calculated based on blended (diluted) inlet gas for Ponds 15S E and W, 16 N, and 18A S and E; all others from undiluted source gas.

[1] No GOPC sample collected, PH3 concentration was > 10,000 ppm.

Table 3.3 RCRA Pond Perimeter Surface Scan Monitoring Results Summary

	Pond 8E		Pond 9E		Pond 8S		Phase IV		Pond 15S		Pond 16S		Pond 17		Pond 18A		
Date	Breathing zone	Detection	Breathing zone	Detection	Breathing zone	Detection	Breathing zone	Detection	Breathing zone	Detection	Breathing zone	Breathing zone	Breathing zone	Detection	Breathing zone	Detection	Comment
July/August - 10	0.00	No	0.00	No	0.00	No	0.00	No	0.00	Yes	NS		0.00	No	0.00	No	Pond 15S detection locations were marked and the entire pond cap surface was monitored.
October-10	0.00	No	0.00	No	0.00	No	0.00	No	0.00	No	0.00	No	0.00	No	0.00	No	
November-10	0.00	No	NS		NS		NS		0.00	No	NS		0.00	No	0.00	No	
December-10	NW		NS		NS		NS		0.00	No	NS		0.00	No	0.00	No	8E perimeter was snow covered for the month.
January-11	NW		NS		NS		NS		NW		NS		NW		NW		8E, 15S, 17, and 18A were snow covered for the month.
February-11	NW		NS		NS		NS		0.00	No	0.00	No	0.00	No	0.00	No	8E perimeter was snow covered for the month.
March-11	0.00	No	0.00	No	0.00	No	0.00	No	0.00	No	NS		0.00	No	0.00	No	
April-11	0.00	No	NS		NS		NS		0.00	No	NS		0.00	No	0.00	No	
May-11	0.00	No	0.00	No	0.00	No	0.00	No	0.00	No	0.00	No	0.00	No	0.00	No	
June-11	0.00	No	NS		NS		NS		0.00	No	NS		0.00	No	0.00	No	
July-11	0.00	No	NS		NS		NS		0.00	No	NS		0.00	No	0.00	No	
August-11	0.00	No	0.00	No	0.00	No	0.00	No	0.00	No	0.00	No	0.00	No	0.00	No	
September-11	0.00	No	NS		NS		NS		0.00	No	NS		0.00	No	0.00	No	
October-11	NS		NS		NS		NS		NS		NS		NS		0.00	No	Pond 18A enhance monitoring (10/10/11).
															0.00	No	Pond 18A enhance monitoring (10/25/11).
November-11	0.00	No	NS		NS		NS		0.00	No	NS		0.00	No	0.00	No	Pond 15S (11/2/11), Pond 18A (11/8/11).
	-	-							0.00	Yes			-	-	-	-	Pond 15S (11/16/11), monitored from soil gas probe #15 to #3 and west standpipe excavation area. 0.05 ppm was found near probes #15 and #2. Investigation afterward identified PH3 source from the base of soil gas probe #2, but could not find any PH3 again around probe #15. Planned to re-seal the base of soil gas Probe #2.
	-	-							0.00	Yes			-	-	0.00	No	Pond 15S and 18A (11/21/11). On pond 15S, 0.05 ppm was found approximately 20' east of soil gas probe #2, and 0.06 ppm approximately 38' east of soil gas probe #2. On 11/22/11 rodent holes were found near these location. The holes were filled with soil, and re-monitoring was 0.00 ppm.
	-	-							0.00	Yes			-	-	-	-	Pond 15S (11/23/11), 0.05 ppm was found approximately 21' west of soil probe # 2, no rodent holes nor cracks were found on the ground. Investigation showed 0.05 ppm at 2" above ground and 0.00 ppm at 8" above ground at this location.
	-	-							0.00	No			-	-	-	-	Pond 15S (11/28/11), no PH3 detected.
December-11	NS		NS		NS		NS		NW		NS		NS		NW		Pond 15S from 12/1/11 to 12/3/11.
																	Pond 15S from 12/5/11 to 12/11/11.
																	Pond 15S from 12/12/11 to 12/18/11.
																	Pond 15S from 12/19/11 to 12/25/11.
																	Pond 15S from 12/26/11 to 12/31/11.
January-12	NS		NS		NS		NS		0.00	No	NS		NS		0.00	No	Pond 15S (1/5/12), no PH3 detected.
									NW								Pond 15S from 1/9/12 to 1/14/12.
																	Pond 15S scheduled for week of 1/15/12.
																	Pond 15S scheduled for week of 1/22/12.
																	Pond 15S scheduled for week of 1/29/12.

Notes

NS = not surveyed per monitoring schedule in Air Monitoring Plan.

NW = not completed due to weather / snow cover conditions.

Table 3.4 Pond 8S Appurtenance Monitoring Results Summary

	TMP Enclosure															
	T-01				T-02				T-03				T-04			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid
7/26/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/27/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/23/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/19/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Cap Drainage Lift Station											
	LS-01						LS-02					
	Ambient Air		Leak Detection				Ambient Air		Leak Detection			
Date	Ambient	BZ	Base	Lid	VP	OF	Ambient	BZ	Base	Lid	VP	OF
7/28/10	0.00	0.00	NS	0.00	NS	NS	0.00	0.00	NS	0.00	NS	NS
10/27/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/23/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/19/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Instrumentation Panel															
	Temperature & Pressure				Alarm				LS-01				LS-02			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambient	BZ	Door	Conduit	Ambient	BZ	Door	Conduit	Ambient	BZ	Door	Conduit	Ambient	BZ	Door	Conduit
July-10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
10/27/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/23/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/19/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Perimeter Gas Collection Pipe Riser or Pressure Monitor				
	Ambient Air		Leak Detection		
Date	Ambient	BZ	Base	Outlet	TJ
July-10	NS	NS	NS	NS	NS
10/27/10	0.00	0.00	0.00	0.00	0.00
2/23/11	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00
8/19/11	0.00	0.00	0.00	0.00	0.00

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, View Port [VP], OverFlow [OF], Door, Conduit, Outlet, and Transmitter Joint [TJ])

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Table 3.5 Pond 9E Appurtenance Monitoring Results Summary

	TMP Enclosure																			
	T-01				T-02				T-03				T-04				T-05			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid
7/10/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/10/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/24/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	TMP Enclosure																			
	T-06				T-07				T-08				T-09				T-10			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid
7/27/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/26/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/24/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	LCDRS Sump 1				LCDRS Sump 2				LCDRS Sump 3			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid
7/28/10	0.00	0.00	NS	0.00	0.00	0.00	NS	0.00	0.00	0.00	NS	0.00
10/26/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/24/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	LCDRS Sump 4				LCDRS Sump 5				LCDRS Sump 6			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid
7/28/10	0.00	0.00	NS	0.00	0.00	0.00	NS	0.00	0.00	0.00	NS	0.00
10/26/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/24/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/17/11	0.00	0.00	0.02	0.02	0.02	0.00	0.02	0.02	0.00	0.00	0.00	0.00

	Instrumentation Panel							
	Temperature & Pressure				Alarm			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambinet	BZ	Door	Conduit	Ambinet	BZ	Door	Conduit
7/10/10	NS	NS	NS	NS	NS	NS	NS	NS
10/26/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/24/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Perimeter Gas Collection Pipe Riser or Pressure Monitor				
	Ambient Air		Leak Detection		
Date	Ambient	BZ	Base	Outlet	TJ
July-10	NS	NS	NS	NS	NS
10/26/10	0.00	0.00	0.00	0.00	0.00
2/24/11	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00
8/17/11	0.00	0.00	0.00	0.00	0.00

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Door, Conduit, Outlet, and Transmitter Joint [TJ]

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Table 3.6 Phase IV Ponds Appurtenance Monitoring Results Summary

	TMP Enclosure															
	T-01				T-02				T-03				T-04			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid
7/28/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	TMP Enclosure											
	T-05				T-06				T-07			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid
7/28/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	TMP Enclosure															
	T-08				T-09				T-10				T-11			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid
7/28/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	TMP Enclosure							
	T-12				T-13			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid
7/28/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, View Port [VP], OverFlow [OF], Door, Conduit, Outlet, and Transmitter Joint [TJ]

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Table 3.6 Phase IV Ponds Appurtenance Monitoring Results Summary

	Cap Drainage Lift Station											
	LS-01						LS-02					
	Ambient Air		Leak Detection				Ambient Air		Leak Detection			
Date	Ambient	BZ	Base	Lid	VP	OF	Ambient	BZ	Base	Lid	VP	OF
7/28/10	0.00	0.00	NS	0.00	NS	NS	0.00	0.00	NS	0.00	NS	NS
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Cap Drainage Lift Station											
	LS-03						LS-04					
	Ambient Air		Leak Detection				Ambient Air		Leak Detection			
Date	Ambient	BZ	Base	Lid	VP	OF	Ambient	BZ	Base	Lid	VP	OF
7/28/10	0.00	0.00	NS	0.00	NS	NS	0.00	0.00	NS	0.00	NS	NS
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Instrumentation Panel																			
	Temperature & Pressure				LS-01				LS-02				LS-03				LS-04			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambinet	BZ	Door	Conduit	Ambinet	BZ	Door	Conduit	Ambinet	BZ	Door	Conduit	Ambinet	BZ	Door	Conduit	Ambinet	BZ	Door	Conduit
July-10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Perimeter Gas Collection Pipe Riser or Pressure monitor																					
	Pond 11					Pond 12					Pond 13					Pond 14					
	Ambient Air		Leak Detection			Ambient Air		Leak Detection			Ambient Air		Leak Detection			Ambient Air		Leak Detection			
Date	Ambient	BZ	Base	Outlet	TJ	Ambient	BZ	Base	Outlet	TJ	Ambient	BZ	Base	Outlet	TJ	Ambient	BZ	Base	Outlet	TJ	
July-10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, View Port [VP], OverFlow [OF], Door, Conduit, Outlet, and Transmitter Joint [TJ]

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Table 3.7 Pond 8E Appurtenance Monitoring Results Summary

TMP Enclosure																
	T-01				T-02				T-03				T-04			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid	Ambient	BZ	Base	Lid
7/28/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/22/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/20/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/13/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/11/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/15/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

LCDRS Sump				
	Ambient Air		Leak Detection	
Date	Ambient	BZ	Base	Lid
7/28/10	0.00	0.00	NS	0.00
10/25/10	0.00	0.00	0.00	0.00
11/22/10	0.00	0.00	0.00	0.00
12/20/10	0.00	0.00	0.00	0.00
1/18/11	0.00	0.00	0.00	0.00
2/21/11	0.00	0.00	0.00	0.00
3/14/11	0.00	0.00	0.00	0.00
4/18/11	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00
6/13/11	0.00	0.00	0.00	0.00
7/11/11	0.00	0.00	0.00	0.00
8/17/11	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00
11/15/11	0.00	0.00	0.00	0.00

Instrumentation Panel				
	Ambient Air		Leak Detection	
Date	Ambinet	BZ	Door	Conduit
7/28/10	NS	NS	NS	NS
10/25/10	0.00	0.00	0.00	0.00
11/22/10	0.00	0.00	0.00	0.00
12/20/10	0.00	0.00	0.00	0.00
1/18/11	0.00	0.00	0.00	0.00
2/21/11	0.00	0.00	0.00	0.00
3/14/11	0.00	0.00	0.00	0.00
4/18/11	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00
6/13/11	0.00	0.00	0.00	0.00
7/11/11	0.00	0.00	0.00	0.00
8/17/11	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00
11/15/11	0.00	0.00	0.00	0.00

Perimeter Gas Collection Pipe Riser or Pressure monitor					
	Ambient Air		Leak Detection		
Date	Ambient	BZ	Base	Outlet	TJ
7/28/10	NS	NS	NS	NS	NS
10/25/10	0.00	0.00	0.00	0.00	0.00
11/22/10	0.00	0.00	0.00	0.00	0.00
12/20/10	0.00	0.00	0.00	0.00	0.00
1/18/11	0.00	0.00	0.00	0.00	0.00
2/21/11	0.00	0.00	0.00	0.00	0.00
3/14/11	0.00	0.00	0.00	0.00	0.00
4/18/11	0.00	0.00	0.00	0.00	0.00
5/16/11	0.00	0.00	0.00	0.00	0.00
6/13/11	0.00	0.00	0.00	0.00	0.00
7/11/11	0.00	0.00	0.00	0.00	0.00
8/17/11	0.00	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00	0.00
11/15/11	0.00	0.00	0.00	0.00	0.00

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Door, Conduit, Outlet, and Transmitter Joint [TJ]

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan)

Table 3.8 Pond 8E Soil Gas Monitoring Results Summary

Location	Probe # 1		Probe # 2		Probe # 3		Probe # 4		Probe # 5		Probe # 6		Probe # 7		Probe # 8		Probe # 9	
Date	BZ	SG	BZ	SG	BZ	SG	BZ	SG	BZ	SG	BZ	SG	BZ	SG	BZ	SG	BZ	SG
7/20/2010	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
11/8/2010	0.00	4.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/22/2011	0.00	0.69	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.05	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00
5/13/2011	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/16/2011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Breathing Zone [BZ] and Average Soil Gas [SG] readings in ppm.

Table 3.9 Ponds 15S, 16S, 17 and 18A Perimeter Pipe Monitoring Results Summary

Month	Pond 8E			Pond 15S						Pond 16S											
				East Standpipe			West Standpipe			West Standpipe			South Standpipe			East Standpipe			North Standpipe		
	Date	BZ	Source	Date	BZ	Source	Date	BZ/AGS	Source	Date	BZ	Source	Date	BZ	Source	Date	BZ	Source	Date	BZ	Source
July/August-10	7/29	0.00	1,800	-	-	4,580	-	-	4,069	-	-	-	-	-	-	-	-	-	-	-	-
October-10	10/26	0.00	635 (1)	-	-	4,519	-	-	4,557	-	-	-	10/21	0.00	0.00	-	-	-	-	-	-
November-10	11/18	0.00	823 (1)	-	-	4,227	-	-	2,644	-	-	-	11/30	0.00	0.00	-	-	-	-	-	-
December-10	12/15	0.00	407 (1)	-	-	4,417	-	-	3,386	-	-	-	12/16	0.00	0.00	-	-	-	-	-	-
January-11	1/17	0.00	900 (1)	-	-	4,614	-	-	3,047	-	-	-	1/13	0.00	34	-	-	-	-	-	-
February-11	2/22	0.00	655 (1)	-	-	4,556	-	-	3,144	2/15	0.00	43	2/2	0.00	0.99	2/23	0.00	1.07	2/23	0.00	241
March-11	3/16	0.00	817 (1)	-	-	-	-	-	-	3/2	0.00	3.58	3/2	0.00	28	3/2	0.00	14	3/2	0.00	202
	-	-	-	-	-	3,995	-	-	3,142	3/17	0.00	2.07	3/17	0.00	8.78	3/17	0.00	3.12	3/16	0.00	335
April-11	4/13	0.00	862 (1)	-	-	-	-	-	-	4/12	0.00	0.46	4/11	0.00	21	4/11	0.00	34	4/12	0.00	269
	-	-	-	-	-	3,777	-	-	4,025	4/27	0.00	0.26	4/26	0.00	15	4/26	0.00	37	4/27	0.00	165
May-11	5/12	0.00	724 (1)	-	-	-	-	-	-	5/11	0.00	0.00	5/11	0.00	0.21	5/11	0.00	60	5/11	0.00	284
	-	-	-	-	-	3,723	-	-	3,755	5/24	0.00	1.90	5/23	0.00	459	5/24	0.00	138	5/24	0.00	523
June-11	5/15	0.00	972 (1)	-	-	-	-	-	-	6/6	0.00	117	6/7	0.00	92	6/6	0.00	229	6/6	0.00	770
	-	-	-	-	-	3,392	-	-	3,034	6/21	0.00	0.07	6/20	0.00	8.34	6/20	0.00	138	6/20	0.00	610
July-11	7/13	0.00	695 (1)	-	-	-	-	-	-	7/6	0.00	0.08	7/5	0.00	11	7/5	0.00	125	7/5	0.00	383
	-	-	-	-	-	2,637	-	-	2,639	7/26	0.00	8.08	7/25	0.00	204	7/25	0.00	289	7/25	0.00	623
August-11	8/16	0.00	480 (1)	-	-	-	-	-	-	8/8	0.00	0.74	8/8	0.00	52	8/8	0.00	470	8/8	0.00	1,382
	-	-	-	-	-	2,279	-	-	2,448	8/22	0.00	0.06	8/23	0.00	76	8/22	0.00	231	8/22	0.00	983
September-11	9/13	0.00	434 (1)	-	-	-	-	-	-	9/6	0.00	0.04	9/7	0.00	0.06	9/6	0.00	160	9/6	0.00	362
	-	-	-	-	-	2,024	-	-	2,249	9/19	0.00	0.43	9/19	0.00	173	9/19	0.00	199	9/19	0.00	476
October-11	-	-	-	-	-	-	-	-	-	10/3	0.00	0.34	10/4	0.00	658	10/3	0.00	668	10/3	0.00	1,297
	-	-	-	-	-	2,216	-	-	2,085	10/24	0.00	51	10/25	0.00	2.41	10/24	0.00	593	10/24	0.00	825
November-11	-	-	-	-	-	-	-	-	-	11/7	0.00	0.07	11/8	0.00	0.03	11/7	0.00	161	11/7	0.00	369
	-	-	-	-	-	2,905	-	-	1,163 (2)	11/21	0.00	0.03	11/21	0.00	1.65	11/21	0.00	219	11/21	0.00	453
December-11	-	-	-	-	-	-	-	-	-	12/6	0.00	0.07	12/5	0.00	20	12/5	0.00	249	12/5	0.00	281
	-	-	-	-	-	3,062	-	-	-	12/19	0.00	33	12/19	0.00	50	12/19	0.00	503	12/19	0.00	915
January-12										1/4	0.00	2.96	1/4	0.00	21	1/4	0.00	291	1/3	0.00	718

Notes:

Pond Perimeter Collection Pipe Breathing Zone (BZ), 4-6"Above Ground Surface [AGS], and Source Concentration.

Pond 15S, 17 and 18A concentrations are average concentration from GES units for the month period except for Demonstration Period results as noted for Ponds 8E and 17.

1) Performance Objective Demonstration Result using dilution box.

2) Pond 15S west perimeter collection pipe was blocked and only ran for two days in November 2011 prior to removal of the west standpipe.

Table 3.9 Ponds 15S, 16S, 17 and 18A Perimeter Pipe Monitoring Results Summary

Month	Pond 17												Pond 18 Cell A					
	NE Standpipe			SE Standpipe			SW Standpipe (Unit 7)			NW Standpipe			South Standpipe			East Standpipe		
	Date	BZ	Source	Date	BZ	Source	Date	BZ	Source	Date	BZ	Source	Date	BZ	Source	Date	BZ	Source
July/August-10	-	-	-	-	-	-	8/5	0.00	18,007	-	-	-	7/22	0.00	7,123	-	-	-
October-10	-	-	3,329	-	-	9,523	-	-	18,939	-	-	16,620	-	-	NS	-	-	-
November-10	-	-	584	-	-	1,942	-	-	11,952	-	-	9,854	-	-	NS	-	-	-
December-10	-	-	87	-	-	399	-	-	6,234	-	-	2,538	12/15	0.00	3,464	-	-	-
January-11	-	-	25	-	-	30	-	-	251	-	-	23	1/20	0.00	3,467	1/17	0.00	19,155
	-	-	-	-	-	-	1/25	0.00	22[1]	-	-	-	-	-	-	1/20	0.00	17,880
February-11	-	-	-	-	-	-	2/14	0.00	8.82[1]	2/14	-	5.26	2/22	0.00	3,798	2/22	0.00	19,625
March-11	3/15	0.00	0.11	3/16	0.00	6.80	3/10	0.00	2.92[1]	3/15	0.00	0.80	3/3	0.00	2,833	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	3/17	0.00	3,511	-	-	15,187
April-11	4/11	0.00	0.07	4/7	0.00	6.23	4/7	0.00	9.72[1]	4/11	0.00	0.55	4/12	0.00	7,187	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	4/26	0.00	4,327	-	-	18,637
May-11	5/18	0.00	0.96	5/17	0.00	2.23	5/12	0.00	5.33 [1]	5/17	0.00	1.85	5/12	0.00	2,772	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	5/25	0.00	3,453	-	-	19,270
June-11	6/14	0.00	0.29	6/14	0.00	1.51	6/15	0.00	3.41 [1]	6/15	0.00	1.55	6/7	0.00	3,740	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	6/21	0.00	4,043	-	-	18,956
July-11	7/12	0.00	1.11	7/12	0.00	1.85	7/13	0.00	9.85 [1]	7/13	0.00	0.33	7/6	0.00	2,892	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	7/26	0.00	4,182	-	-	15,410
August-11	8/11	0.00	0.11	8/11	0.00	0.45	8/11	0.00	6.62 [1]	8/11	0.00	0.64	8/9	0.00	2,798	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	8/23	0.00	2,716	-	-	11,801
September-11	9/12	0.00	0.12	9/12	0.00	0.62	9/14	0.00	7.42 [1]	9/13	0.00	0.71	9/7	0.00	2,168	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	9/19	0.00	1,579	-	-	8,253
October-11	10/6	0.00	0.30	10/11	0.00	0.28	10/12	0.00	3.80 [1]	10/11	0.00	0.93	10/4	0.00	1,780	10/10	0.00	3,505
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10/25	0.00	1,707
November-11	11/15	0.00	0.00	11/15	0.00	0.50	11/15	0.00	3.37 [1]	11/15	0.00	0.08	-	-	-	11/8	0.00	1,136
	-	-	-	-	-	-	-	-	-	-	-	-	11/22	0.00	309	11/22	0.00	1,137
December-11	12/13	0.00	0.00	12/13	0.00	2.32	12/14	0.00	2.81 [1]	12/13	0.00	0.57	12/6	0.00	461	12/6	0.00	1,240
	-	-	-	-	-	-	-	-	-	-	-	-	12/20	0.00	548	12/20	0.00	2,503
January-12													1/3	0.00	515	1/3	0.00	1,795

Notes:

Pond Perimeter Collection Pipe Breathing Zone (BZ), 4-6"Above Ground Surface [AGS], and Source Concentration.

Pond 15S, 17 and 18A concentrations are average concentration from GES units for the month period except for Demonstration Period results as noted for Ponds 8E and 17.

1) Performance Objective Demonstration Result using dilution box.

2) Pond 15S west perimeter collection pipe was blocked and only ran for two days in November 2011 prior to removal of the west standpipe.

Table 3.10 Pond 16S Appurtenance Monitoring Results Summary

TMP Enclosure												
	T-01						T-02					
	Ambient Air		Leak Detection			Inside	Ambient Air		Leak Detection			Inside
Date	Ambient	BZ	Base	Lid	PO		Ambient	BZ	Base	Lid	PO	
July-10	NS	NS	NS	NS	-	-	NS	NS	NS	NS	-	-
10/26/10	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-
2/8/11	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-
5/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TMP Enclosure												
	T-03						T-04					
	Ambient Air		Leak Detection			Inside	Ambient Air		Leak Detection			Inside
Date	Ambient	BZ	Base	Lid	PO		Ambient	BZ	Base	Lid	PO	
July-10	NS	NS	NS	NS	-	-	NS	NS	NS	NS	-	-
10/26/10	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-
2/8/11	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-
5/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TMP Enclosure												
	T-05						T-06					
	Ambient Air		Leak Detection			Inside	Ambient Air		Leak Detection			Inside
Date	Ambient	BZ	Base	Lid	PO		Ambient	BZ	Base	Lid	PO	
July-10	NS	NS	NS	NS	-	-	NS	NS	NS	NS	-	-
10/26/10	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-
2/8/11	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-
5/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TMP Enclosure												
	T-07						T-08					
	Ambient Air		Leak Detection			Inside	Ambient Air		Leak Detection			Inside
Date	Ambient	BZ	Base	Lid	PO		Ambient	BZ	Base	Lid	PO	
July-10	NS	NS	NS	NS	-	-	NS	NS	NS	NS	-	-
10/26/10	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-
2/8/11	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-
5/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Pipe Opening [PO], Inside, View Port [VP], OverFlow [OF], Door, Conduit, Outlet, and Transmitter Joint [TJ]

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan)

Table 3.10 Pond 16S Appurtenance Monitoring Results Summary

	LCDRS Sump 1 (east)					LCDRS Sump 2 (west)				
	Ambient Air		Leak Detection		Inside	Ambient Air		Leak Detection		Inside
Date	Ambient	BZ	Base	Lid		Ambient	BZ	Base	Lid	
July-10	NS	NS	NS	NS	-	NS	NS	NS	NS	-
10/26/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
2/8/11	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
5/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03

Cap Drainage Lift Station														
	LS-01							LS-02						
	Ambient Air		Leak Detection				Inside	Ambient Air		Leak Detection				Inside
Date	Ambient	BZ	Base	Lid	VP	OF		Ambient	BZ	Base	Lid	VP	OF	
July-10	NS	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	-
10/26/10	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-
2/8/11	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-
5/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.06

Instrumentation Panel															
	Temperature & Pressure					LS-01					LS-02				
	Ambient Air		Leak Detection		Inside	Ambient Air		Leak Detection		Inside	Ambient Air		Leak Detection		Inside
Date	Ambinet	BZ	Door	Conduit		Ambinet	BZ	Door	Conduit		Ambinet	BZ	Door	Conduit	
July-10	NS	NS	NS	NS	-	NS	NS	NS	NS	-	NS	NS	NS	NS	-
10/26/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
2/8/11	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
5/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Instrumentation Panel										
	LCDRS-01					LCDRS-02				
	Ambient Air		Leak Detection		Inside	Ambient Air		Leak Detection		Inside
Date	Ambinet	BZ	Door	Conduit		Ambinet	BZ	Door	Conduit	
July-10	NS	NS	NS	NS	-	NS	NS	NS	NS	-
10/26/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
2/8/11	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
5/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Pipe Opening [PO], Inside, View Port [VP], OverFlow [OF], Door, Conduit, Outlet, and Transmitter Joint [TJ]

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan)

Table 3.10 Pond 16S Appurtenance Monitoring Results Summary

Perimeter Gas Collection Pipe Riser or Pressure monitor																
	North				East					South				West			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection			Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambient	BZ	Base	Outlet	Ambient	BZ	Base	Outlet	TJ	Ambient	BZ	Base	Outlet	Ambient	BZ	Base	Outlet
July-10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
10/26/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/8/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/19/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Pipe Opening [PO], Inside, View Port [VP], OverFlow [OF], Door, Conduit, Outlet, and Transmitter Joint [TJ]

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan)

Table 3.11 Pond 16S Soil Gas Monitoring Results Summary

Location	Probe # 1		Probe # 2		Probe # 3		Probe # 4		Probe # 5		Probe # 6		Probe # 7	
Date	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG
12/28/2010	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.28	0.00/0.00	0.00	0.00/0.00	0.00
1/13/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.04	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
2/2/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.01	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
3/2/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.63	0.00/0.00	0.00	0.00/0.00	0.00
4/11/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.02
5/12/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
6/7 & 6/8/2011	0.00/0.00	0.01	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	1.08	0.00/0.00	0.03	0.00/0.00	0.02
7/6/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.04	0.00/0.00	0.00	0.00/0.00	0.00
8/9/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.55	0.00/0.00	0.00	0.00/0.00	0.00
9/7/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.02	0.00/0.00	0.06
10/5/2011	0.00/0.00	0.23	0.00/0.00	0.03	0.00/0.00	0.03	0.00/0.00	0.07	0.00/0.00	2.02	0.00/0.00	0.06	0.00/0.00	0.00
11/8/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
12/8/2011	0.00/0.00	0.02	0.00/0.00	0.03	0.00/0.00	0.02	0.00/0.00	0.02	0.00/0.00	0.42	0.00/0.00	0.02	0.00/0.00	0.01
1/4/2012	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.88	0.00/0.00	0.13	0.00/0.00	0.02

Location	Probe # 8		Probe # 9		Probe # 10		Probe # 11		Probe # 12		Probe # 13		Probe # 14	
Date	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG	BZ/AGS	SG
12/28/2010	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
1/13/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
2/2/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.03	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
3/2/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.01	0.00/0.00	0.10	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
4/11/2011	0.00/0.00	0.01	0.00/0.00	0.02	0.00/0.00	0.00	0.00/0.00	0.01	0.00/0.00	0.02	0.00/0.00	0.02	0.00/0.00	0.00
5/12/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
6/7 & 6/8/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
7/6/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
8/9/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.05	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
9/7/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
10/5/2011	0.00/0.00	0.00	0.00/0.00	0.04	0.00/0.00	0.43	0.00/0.00	8.12	0.00/0.00	0.91	0.00/0.00	0.06	0.00/0.00	0.00
11/8/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
12/8/2011	0.00/0.00	0.01	0.00/0.00	0.02	0.00/0.00	0.00	0.00/0.00	1.51	0.00/0.00	0.00	0.00/0.00	0.01	0.00/0.00	0.00
1/4/2012	0.00/0.00	0.00	0.00/0.00	0.02	0.00/0.00	0.18	0.00/0.00	3.07	0.00/0.00	1.13	0.00/0.00	0.00	0.00/0.00	0.00

Breathing Zone [BZ] and Average Soil Gas [SG] readings in ppm.

Table 3.12 Pond 16S TMP Monitoring Results Summary

	TMP 01		TMP 02		TMP 03		TMP 04		TMP 05		TMP 06		TMP 07		TMP 08		Pond
Date	BZ	Source	BZ	Source	BZ	Source	BZ	Source	BZ	Source	BZ	Source	BZ	Source	BZ	Source	Average
11/10/10	-	535	-	379	-	273	-	316	-	533	-	445	-	375	-	567	428
12/16/10	0.00	1,091	0.00	875	0.00	467	0.00	1,400	0.00	280	0.00	490	0.00	897	0.00	580	760
01/13/11	0.00	1,195	0.00	1,282	0.00	431	0.00	842	0.00	232	0.00	476	0.00	396	0.00	966	728
02/02/11	0.00	1,619	0.00	1,174	0.00	460	0.00	1,005	0.00	887	0.00	558	0.00	507	0.00	1,040	906
03/02/11	0.00	1,960	0.00	1,350	0.00	517	0.00	982	0.00	1,246	0.00	713	0.00	685	0.00	1,021	1,059
04/11/11	0.00	1,703	0.00	827	0.00	457	0.00	835	0.00	2,383	0.00	1,227	0.00	2,068	0.00	1,476	1,372
05/11/11	0.00	2,296	0.00	905	0.00	366	0.00	655	0.00	3,222	0.00	2,390	0.00	2,037	0.00	1,440	1,664
06/08/11	0.00	3,210	0.00	974	0.00	279	0.00	740	0.00	3,187	0.00	3,180	0.00	1,978	0.00	1,417	1,871
07/06/11	0.00	3,932	0.00	1,026	0.00	399	0.00	690	0.00	3,918	0.00	4,255	0.00	2,350	0.00	1,744	2,289
08/09/11	0.00	4,774	0.00	1,280	0.00	488	0.00	897	0.00	6,053	0.00	5,122	0.00	3,477	0.00	2,064	3,019
09/07/11	0.00	6,048	0.00	1,202	0.00	269	0.00	1,003	0.00	6,653	0.00	6,083	0.00	3,644	0.00	2,511	3,427
10/05/11	0.00	7,329	0.00	1,662	0.00	527	0.00	1,386	0.00	6,478	0.00	5,525	0.00	3,462	0.00	2,907	3,660
11/09/11	0.00	7,707	0.00	1,624	0.00	667	0.00	1,429	0.00	7,455	0.00	6,494	0.00	4,414	0.00	4,454	4,281
12/7 & 12/8/2011	0.00	9,112	0.00	1,772	0.00	678	0.00	1,249	0.00	9,154	0.00	8,774	0.00	5,775	0.00	5,389	5,238
01/04/12	0.00	13,658	0.00	2,307	0.00	1,186	0.00	2,124	0.00	15,530	0.00	10,343	0.00	6,233	0.00	6,159	7,193

Notes:
November 10, 2011 results measured during Pond 16S GETS operation, all other results using GETS for TMP monitoring per Assessment Study Work Plan.
Breathing Zone (BZ) and Source Gas Concentrations in ppm.

Table 3.13 Pond 17 Appurtenance Monitoring Results Summary

TMP Enclosure															
	T-01					T-02					T-03				
	Ambient Air		Leak Detection			Ambient Air		Leak Detection			Ambient Air		Leak Detection		
Date	Ambient	BZ	Base	Lid	PO	Ambient	BZ	Base	Lid	PO	Ambient	BZ	Base	Lid	PO
7/28/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/22/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/20/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/23/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/12/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/9/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/15/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TMP Enclosure															
	T-04					T-05					T-06				
	Ambient Air		Leak Detection			Ambient Air		Leak Detection			Ambient Air		Leak Detection		
Date	Ambient	BZ	Base	Lid	PO	Ambient	BZ	Base	Lid	PO	Ambient	BZ	Base	Lid	PO
7/28/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/22/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/20/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/23/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/12/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/9/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/15/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Pipe Opening [PO], Door, Conduit, Outlet, Extraction Flange [EF] and Transmitter Joint [TJ])

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Table 3.13 Pond 17 Appurtenance Monitoring Results Summary

	LCDRS Sump			
	Ambient Air		Leak Detection	
Date	Ambient	BZ	Base	Lid
7/28/10	0.00	0.00	NS	0.00
10/25/10	0.00	0.00	0.00	0.00
11/22/10	0.00	0.00	0.00	0.00
12/20/10	0.00	0.00	0.00	0.00
1/17/11	0.00	0.00	0.00	0.00
2/23/11	0.00	0.00	0.00	0.00
3/16/11	0.00	0.00	0.00	0.00
4/21/11	0.00	0.00	0.00	0.00
5/18/11	0.00	0.00	0.00	0.00
6/14/11	0.00	0.00	0.00	0.00
7/12/11	0.00	0.00	0.00	0.00
8/9/11	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00
11/15/11	0.00	0.00	0.00	0.00

	Temperature & Pressure Panel				LCDRS Panel			
	Ambient Air		Leak Detection		Ambient Air		Leak Detection	
Date	Ambinet	BZ	Door	Conduit	Ambinet	BZ	Door	Conduit
7/28/10	NS	NS	NS	NS	NS	NS	NS	NS
10/25/10	0.00	0.00	0.00	0.00	NS	NS	NS	NS
11/22/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/20/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/23/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/12/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/9/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/15/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Pipe Opening [PO], Door, Conduit, Outlet, Extraction Flange [EF] and Transmitter Joint [TJ])

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Table 3.13 Pond 17 Appurtenance Monitoring Results Summary

Perimeter Gas Collection Pipe Riser or Pressure monitor															
	Control panel					NE Standpipe					SE Standpipe				
	Ambient Air		Leak Detection			Ambient Air		Leak Detection			Ambient Air		Leak Detection		
Date	Ambient	BZ	Base	Outlet	TJ	Ambient	BZ	Base	Outlet	EF	Ambient	BZ	Base	Outlet	EF
7/28/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/22/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/20/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/23/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/12/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/9/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/15/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Perimeter Gas Collection Pipe Riser or Pressure monitor										
	SW Standpipe					NW Standpipe				
	Ambient Air		Leak Detection			Ambient Air		Leak Detection		
Date	Ambient	BZ	Base	Outlet	EF	Ambient	BZ	Base	Outlet	EF
7/28/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/22/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/20/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/23/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/12/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/9/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/15/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Pipe Opening [PO], Door, Conduit, Outlet, Extraction Flange [EF] and Transmitter Joint [TJ])

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Table 3.14 Pond 18A Appurtenance Monitoring Results Summary

TMP Enclosure																
	T-01					T-02					T-03					
	Ambient Air		Leak Detection		Inside	Ambient Air		Leak Detection		Inside	Ambient Air		Leak Detection		Inside	
Date	Ambient	BZ	Base	Lid		Ambient	BZ	Base	Lid		Ambient	BZ	Base	Lid		
7/28/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
10/25/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
11/23/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
12/20/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
1/18/11	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
2/23/11	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	11.50	0.00	-	
2/24/11	-	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00	-	Note: Recompacted soil around T-03 base and re-sampled.
3/16/11	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
4/19/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
6/15/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	
											0.00	0.00	0.00	0.00	0.00	Note: Re-sampled T-03 after tightening loose flange.
7/12/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
8/9/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
10/10/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
10/25/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11/8/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
12/20/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1/13/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

LCDRS Sump					
	Ambient Air		Leak Detection		Inside
Date	Ambient	BZ	Base	Lid	
7/28/10	0.00	0.00	NS	0.00	-
10/25/10	0.00	0.00	0.00	0.00	-
11/23/10	0.00	0.00	0.00	0.00	-
12/20/10	0.00	0.00	0.00	0.00	-
1/18/11	0.00	0.00	0.00	0.00	-
2/23/11	0.00	0.00	0.00	0.00	-
3/16/11	0.00	0.00	0.00	0.00	-
4/19/11	0.00	0.00	0.00	0.00	0.00
5/18/11	0.00	0.00	0.00	0.00	0.00
6/15/11	0.00	0.00	0.00	0.00	0.00
7/12/11	0.00	0.00	0.00	0.00	0.00
8/9/11	0.00	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00	0.00
10/10/11	0.00	0.00	0.00	0.00	0.00
10/25/11	0.00	0.00	0.00	0.00	0.00
11/8/11	0.00	0.00	0.00	0.00	0.00
11/21/11	0.00	0.00	0.00	0.00	0.00
12/20/11	0.00	0.00	0.00	0.00	0.00
1/13/12	0.00	0.00	0.00	0.00	0.04

Cap Drainage Lift Station																	
	LS-01							LS-02									
	Ambient Air		Leak Detection				Inside	Ambient Air		Leak Detection					Inside		
Date	Ambient	BZ	Base	Lid	VP	OF		Ambient	BZ	Base	Lid	VP	OF				
7/28/10	0.00	0.00	NS	0.00	NS	NS	-	0.00	0.00	NS	0.00	NS	NS	-			
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-			
11/23/10	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-			
12/20/10	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-			
1/18/11	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-			
2/23/11	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-			
3/16/11	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-			
4/19/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
5/18/11	0.00	0.00	0.00	0.00	0.00	0.00	1.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
6/15/11	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
7/12/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
8/9/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
10/10/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
10/25/11	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
11/8/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
11/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
12/20/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
1/13/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Inside, View Port [VP], OverFlow [OF], Door, Conduit, Outlet, and Transmitter Joint [TJ]

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Table 3.14 Pond 18A Appurtenance Monitoring Results Summary

	Instrumentation Panel																			
	Temperature & Pressure					LS-01					LS-02					LCDRS				
	Ambient Air		Leak Detection		Inside	Ambient Air		Leak Detection		Inside	Ambient Air		Leak Detection		Inside	Ambient Air		Leak Detection		Inside
Date	Ambinet	BZ	Door	Conduit		Ambinet	BZ	Door	Conduit		Ambinet	BZ	Door	Conduit		Ambinet	BZ	Door	Conduit	
7/28/10	NS	NS	NS	NS	-	NS	NS	NS	NS	-	NS	NS	NS	NS	-	NS	NS	NS	NS	-
10/25/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
11/23/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
12/20/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
1/18/11	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
2/23/11	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
3/16/11	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
4/19/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/15/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/12/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/9/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/10/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/25/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/8/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/20/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/13/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Perimeter Gas Collection Pipe Riser or Pressure monitor								
	East Side					South Side			
	Ambient Air		Leak Detection			Ambient Air		Leak Detection	
Date	Ambient	BZ	Base	Outlet	TJ	Ambient	BZ	Base	Outlet
7/28/10	NS	NS	NS	NS	NS	NS	NS	NS	NS
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/23/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/20/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/23/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/16/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/19/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/15/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/12/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/9/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/10/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/25/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/8/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/20/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/13/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Inside, View Port [VP], OverFlow [OF], Door, Conduit, Outlet, and Transmitter Joint [TJ]

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Table 3.15 Pond 17 Soil Gas Monitoring Results Summary

Location	Probe # 1		Probe # 2		Probe # 3		Probe # 4		Probe # 5		Probe # 6	
Date	BZ	SG	BZ	SG	BZ	SG	BZ	SG	BZ	SG	BZ	SG
7/26/2010	0.00	0.74	0.00	0.17	0.00	0.10	0.00	0.10	0.00	1.00	0.00	0.00
10/11/2010	0.00	1.47	0.00	0.05	0.00	3.05	0.00	0.04	0.00	0.42	0.00	1.08
11/8/2010	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/6/2010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/10/2011	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/14/2011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/10/2011	0.00	Note 1	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/7/2011	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00
5/16/2011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/13 & 6/14/2011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00
8/16/2011	0.00	0.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/15/2011	0.00	0.03	0.00	0.01	0.00	0.04	0.00	0.03	0.00	0.03	0.00	0.01

Location	Probe # 7		Probe # 8		Probe # 9		Probe # 10		Probe # 11	
Date	BZ	SG	BZ	SG	BZ	SG	BZ	SG	BZ	SG
7/26/2010	0.00	171	0.00	0.20	0.00	0.06	0.00	0.62	0.00	7.90
10/11/2010	0.00	628	0.00	1.59	0.00	0.53	0.00	8.32	0.00	112
11/8/2010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/6/2010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/10/2011	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
2/14/2011	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00
3/10/2011	0.00	0.01	0.00	0.01	0.00	0.04	0.00	0.00	0.00	0.00
4/7/2011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/16/2011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/13 & 6/14/2011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/16/2011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/15/2011	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Breathing Zone [BZ] and Average Soil Gas [SG] readings in ppm.

Note 1: Probe was full of water from snow thaw, unable to sample.

Table 3.16 Pond 18A Soil Gas Monitoring Results Summary

Perimeter Shallow Probes																				
Location	**Probe # 1**		**Probe # 2**		**Probe # 3**		**Probe # 4**		**Probe # 5**		**Probe # 6**		**Probe # 7**		**Probe # 8**		**Probe # 9**		**Probe # 10**	
Date	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**
7/26/2010	0.00/0.00	0.00	0.00/0.00	2.81	0.00/0.00	0.63	0.00/0.00	58	0.00/0.00	0.01	0.00/0.00	0.21	0.00/0.00	0.00	0.00/0.00	0.04	0.00/0.00	0.03	0.00/0.00	0.00
12/16/2010	0.00/0.00	0.08	0.00/0.00	19	0.00/0.00	1.58	0.00/0.00	55	0.00/0.00	0.04	0.00/0.00	1.34	0.00/0.00	0.02	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
1/18/2011	0.00/0.00	0.11	0.00/0.00	156	0.00/0.00	3.99	0.00/0.00	658	0.00/0.00	0.32	0.00/0.00	2.74	0.00/0.00	0.01	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
2/22/2011	0.00/0.00	0.00	0.00/0.00	106	0.00/0.00	121	0.00/0.00	1000+	0.00/0.00	0.68	0.00/0.00	0.17	0.00/0.00	0.02	0.00/0.00	0.04	0.00/0.00	0.00	0.00/0.00	0.00
3/3/2011	0.00/0.00	0.00	0.00/0.00	6.75	0.00/0.00	3.30	0.00/0.00	1000+	0.00/0.00	0.03	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
4/12/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
5/4/2011	0.00/0.00	0.00	0.00/0.00	0.02	0.00/0.00	0.00	0.00/0.00	0.02	0.00/0.00	0.01	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
5/25/2011	0.00/0.00	0.03	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
6/20/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
7/27/2011	0.00/0.00	0.03	0.00/0.00	0.02	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.03	0.00/0.00	0.00	0.00/0.00	0.00
8/24/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
9/20/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
10/10/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
10/25/2011	0.00/0.00	0.00	0.00/0.00	0.19	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
11/8/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
11/21/2011	0.00/0.00	0.02	0.00/0.00	0.09	0.00/0.00	0.02	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
12/20/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.03	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
1/13/2012	0.00/0.00	0.00	0.00/0.00	3.68	0.00/0.00	0.02	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00

Step-Out Probes																
Location	**Probe # 2A**		**Probe # 4A**		**Probe # 7A**		**Probe # 9A**		**Probe # LS-1 A**		**Probe # LS-1 B**		**Probe # LS-2 A**		**Probe # LS-2 B**	
Monitor Elevation	4448.7		4448.7		4448.7		4448.7		4449.2		4449.2		4450.0		4450.0	
Depth Below Ground Surface (ft)	3.25		3.50		3.00		2.50		2.85		2.85		3.00		3.00	
Date	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**
5/4/2011	0.00/0.00	0.01	0.00/0.00	0.06	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.03
5/25/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.01	0.00/0.00	0.00	0.00/0.00	0.04	0.00/0.00	0.03
6/20/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
7/27/11	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
8/24/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
9/20/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
10/10/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
10/25/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
11/8/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
11/21/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
12/20/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
1/13/2012	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00

Breathing Zone [BZ] and Average Soil Gas [SG] readings in ppm.

Table 3.17 Pond 17 TMP Monitoring Results Summary

	TMP 01		TMP 02		TMP 03		TMP 04		TMP 05		TMP 06		Pond
Date	BZ	Source	BZ	Source	BZ	Source	BZ	Source	BZ	Source	BZ	Source	Average
8/3 & 4/10	0.00	18,422	0.00	12,129	0.00	NS	0.00	4,800	0.00	10,352	0.00	1,661	9,473
10/21/10	0.00	30,463	0.00	18,501	0.00	3,042	0.00	7,379	0.00	18,338	0.00	8,482	14,368
11/16 & 17/10	0.00	16,852	0.00	2,768	0.00	183	0.00	0.42	0.00	51	0.00	1,019	3,479
12/13/10	0.00	7,321	0.00	281	0.00	NF	0.00	0.06	0.00	1.42	0.00	118	1,544
1/10/11	0.00	6.77	0.00	0.18	0.00	0.03	0.00	0.05	0.00	0.67	0.00	0.39	1.35
2/14 & 15/11	0.00	43	0.00	1.12	0.00	NF	0.00	0.04	0.00	0.86	0.00	1.09	9.16
3/9 to 3/15/11	0.00	25	0.00	1.43	0.00	0.12	0.00	0.03	0.00	1.34	0.00	2.80	5.12
4/6 & 4/7/11	0.00	54	0.00	7.77	0.00	0.09	0.00	0.10	0.00	2.51	0.00	11	13
5/16 & 5/17/2011	0.00	59	0.00	3.14	0.00	NF	0.00	NF	0.00	1.16	0.00	5.51	17
6/13 & 6/14/11	0.00	55	0.00	12	0.00	NF	0.00	NF	0.00	1.46	0.00	1.53	17
8/10 to 8/15/2011	0.00	40	0.00	35	0.00	NF	0.00	NF	0.00	8.13	0.00	6.15	22
11/10 & 11/14/2011	0.00	14	0.00	13	0.00	NF	0.00	0.10	0.00	1.54	0.00	6.28	7.05

Notes:

Breathing Zone (BZ) and Source Gas Concentrations in ppm.

August 3 & 4, 2010 results measured or not sampled (NS) per Site-Wide Gas Assessment Work Plan, all other results per RCRA Pond PH3 Assessment Study Work Plan.

NF= No flow, no source gas PH3 measurement.

Table 3.18 Pond 15S Appurtenance Monitoring Results Summary

TMP Enclosure																								Comment
	T-01						T-02						T-03						T-04					
	Ambient Air		Leak Detection			Inside	Ambient Air		Leak Detection			Inside	Ambient Air		Leak Detection			Inside	Ambient Air		Leak Detection			Inside	
Date	Ambient	BZ	Base	Lid	PO		Ambient	BZ	Base	Lid	PO		Ambient	BZ	Base	Lid	PO		Ambient	BZ	Base	Lid	PO		
7/28/10	0.00	0.00	0.00	0.00	-	-	0.00	0.00	0.00	0.00	-	-	0.00	0.00	0.00	0.00	-	-	0.00	0.00	0.00	0.00	-	-	
10/25/10	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
11/23/10	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
12/20/10	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
1/17/11	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
2/18/11	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
3/14/11	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
4/19/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5/17/11	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
6/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
7/11/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
8/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11/11/11	0.00	0.00	1.25	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.03	2.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	Initial reading.
11/11/11	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	Reading after tightening flanges.
11/16/11	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Reading after re-compact soil around base T01.
11/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11/23/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11/28/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
12/2/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
12/5/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
12/8/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
12/13/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
12/19/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
12/27/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	0.00	0.00	0.00	0.00	0.00	NA	NA	NA	NA	NA	

TMP Enclosure																								Comment
	T-05						T-06						T-07						T-08					
	Ambient Air		Leak Detection			Inside	Ambient Air		Leak Detection			Inside	Ambient Air		Leak Detection			Inside	Ambient Air		Leak Detection			Inside	
Date	Ambient	BZ	Base	Lid	PO		Ambient	BZ	Base	Lid	PO		Ambient	BZ	Base	Lid	PO		Ambient	BZ	Base	Lid	PO		
7/28/10	0.00	0.00	0.00	0.00	-	-	0.00	0.00	0.00	0.00	-	-	0.00	0.00	0.00	0.00	-	-	0.00	0.00	0.00	0.00	-	-	
10/25/10	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
11/23/10	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
12/20/10	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
1/17/11	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
2/18/11	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
3/14/11	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
4/19/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
6/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
7/11/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
8/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11/11/11	0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.00	0.02	0.04	0.88	1.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Initial reading.
11/11/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.34	-	-	-	-	-	-	-	-	-	-	-	-	Reading after tightening flanges.
11/16/11	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	Reading after re-compact soil around base T06.
11/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11/23/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11/23/11	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	Reading after sealing flange T06.
11/28/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
12/2/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
12/5/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
12/6/11	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	Reading after replacement of gasket T06.
12/8/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Pipe Opening [PO], Inside, View Port [VP], Overflow [OF], Door, Conduit, Outlet, Extraction Flange [EF], and Transmitter Joint [TJ]

NA = Monitoring Not Applicable, monitoring for specified date and locations per 15S Interim Work Plan Addendum A (December 2, 2011).

Table 3.18 Pond 15S Appurtenance Monitoring Results Summary

TMP Enclosure													Comment
	T-09						T-10						
	Ambient Air		Leak Detection			Inside	Ambient Air		Leak Detection			Inside	
Date	Ambient	BZ	Base	Lid	PO		Ambient	BZ	Base	Lid	PO		
7/28/10	0.00	0.00	0.00	0.00	-	-	0.00	0.00	0.00	0.00	-	-	
10/25/10	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
11/23/10	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
12/20/10	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
1/17/11	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
2/18/11	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
3/14/11	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
4/19/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
6/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
7/11/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
8/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11/11/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11/21/11	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	
11/22/11	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-	Reading after tightening flanges.
11/23/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11/28/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
12/2/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
12/5/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
12/8/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

	LCDRS Sump 1					LCDRS Sump 2					LCDRS Sump 3					LCDRS Sump 4				
	Ambient Air		Leak Detection		Inside	Ambient Air		Leak Detection		Inside	Ambient Air		Leak Detection		Inside	Ambient Air		Leak Detection		Inside
Date	Ambient	BZ	Base	Lid		Ambient	BZ	Base	Lid		Ambient	BZ	Base	Lid		Ambient	BZ	Base	Lid	
7/28/10	0.00	0.00	NS	0.00	-	0.00	0.00	NS	0.00	-	0.00	0.00	NS	0.00	-	0.00	0.00	NS	0.00	-
10/25/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
11/23/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
12/20/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
1/17/11	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
2/18/11	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
3/14/11	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-
4/19/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00
5/17/11	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.04
6/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/11/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/10/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/22/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/23/11	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00
11/28/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/2/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00
12/5/11	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.05
12/8/11	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.04

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Pipe Opening [PO], Inside, View Port [VP], Overflow [OF], Door, Conduit, Outlet, Extraction Flange [EF], and Transmitter Joint [TJ]

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Table 3.18 Pond 15S Appurtenance Monitoring Results Summary

	Cap Drainage Lift Station													Comment
	LS-01							LS-02						
	Ambient Air		Leak Detection				Inside	Ambient Air		Leak Detection				Inside	
Date	Ambient	BZ	Base	Lid	VP	OF		Ambient	BZ	Base	Lid	VP	OF		
7/28/10	0.00	0.00	NS	0.00	NS	NS	-	0.00	0.00	NS	0.00	NS	NS	-	
10/25/10	0.00	0.00	0.23	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	
11/23/10	0.00	0.00	0.04	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	
12/20/10	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	
1/17/11	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	
2/18/11	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	
3/14/11	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	-	
4/19/11	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.03	
5/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.03	
6/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
7/11/11	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
8/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11/10/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	
11/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11/23/11	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.03	
11/28/11	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
12/2/11	0.00	0.00	0.00	0.00	0.00	0.00	136	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
12/3/11	0.00	0.00	0.00	0.00	0.00	0.00	40	-	-	-	-	-	-	-	Re-check LS-01.
12/5/11	0.00	0.00	0.00	0.00	0.00	0.00	37	0.00	0.00	0.00	0.00	0.00	0.00	0.06	
12/8/11	0.00	0.00	0.00	0.00	0.00	0.00	100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
12/13/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA	NA	NA	NA	NA	
12/19/11	0.00	0.00	0.00	0.00	0.00	0.00	14	NA	NA	NA	NA	NA	NA	NA	
12/27/11	0.00	0.00	0.00	0.00	0.00	0.00	40	NA	NA	NA	NA	NA	NA	NA	
1/5/12	0.00	0.00	0.00	0.00	0.00	0.00	5	NA	NA	NA	NA	NA	NA	NA	
1/10/12	0.00	0.00	0.00	0.00	0.00	0.00	85	NA	NA	NA	NA	NA	NA	NA	

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Pipe Opening [PO], Inside, View Port [VP], Overflow [OF], Door, Conduit, Outlet, Extraction Flange [EF], and Transmitter Joint [TJ]

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

NA = Monitoring Not Applicable, monitoring for specified date and locations per 15S Interim Work Plan Addendum A (December 2, 2011).

Table 3.18 Pond 15S Appurtenance Monitoring Results Summary

	Instrumentation Panel															Comment
	Temperature & Pressure					LS-01					LS-02					
	Ambient Air		Leak Detection		Inside	Ambient Air		Leak Detection		Inside	Ambient Air		Leak Detection		Inside	
Date	Ambient	BZ	Door	Conduit		Ambient	BZ	Door	Conduit		Ambient	BZ	Door	Conduit		
7/28/10	NS	NS	NS	NS	-	NS	NS	NS	NS	-	NS	NS	NS	NS	-	
10/25/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
11/23/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
12/20/10	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
1/17/11	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
2/18/11	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
3/14/11	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
4/19/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
6/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
7/11/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
8/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11/10/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11/21/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.02	
11/23/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11/28/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
12/2/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.00	
12/3/11	-	-	-	-	-	0.00	0.00	0.00	0.00	0.42	-	-	-	-	-	Re-check LS-01.
12/5/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	
12/8/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
12/13/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA	NA	NA	
12/19/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA	NA	NA	NA	
12/27/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	NA	NA	NA	NA	NA	
1/5/12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	NA	NA	NA	NA	NA	
1/10/12	NA	NA	NA	NA	NA	0.00	0.00	0.00	0.00	6.20	NA	NA	NA	NA	NA	

	Perimeter Gas Collection Pipe Riser or Pressure monitor										
	East Side					West Side					
	Ambient Air		Leak Detection			Ambient Air		Leak Detection			
Date	Ambient	BZ	Base	Outlet	EF	Ambient	BZ	Base	Outlet	EF	TJ
7/28/10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
10/25/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/23/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/20/10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/18/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/19/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/11/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/17/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/14/11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/10/11	0.00	0.00	0.00	0.00	0.00	Removed					
11/17/11	0.00	0.00	0.00	0.00	0.00	Removed					
11/21/11	0.00	0.00	0.00	0.00	0.00	Removed					
11/23/11	0.00	0.00	0.00	0.00	0.00	Removed					
11/28/11	0.00	0.00	0.00	0.00	0.00	Removed					
12/2/11	0.00	0.00	0.00	0.00	0.00	Removed					
12/5/11	0.00	0.00	0.00	0.00	0.00	Removed					
12/8/11	0.00	0.00	0.00	0.00	0.00	Removed					

Appurtenance Monitoring includes:

Ambient Air : Ambient (12" around appurtenances) and Breathing Zone (BZ)

Leak Detection : Source of potential leak (within 1" to 2" of Base, Lid, Pipe Opening [PO], Inside, View Port [VP], Overflow [OF], Door, Conduit, Outlet, Extraction Flange [EF], and Transmitter Joint [TJ]

NS = Not Surveyed (monitoring not part of Site-Wide Gas Assessment Work Plan).

Table 3.19 Pond 15S Soil Gas Monitoring Results Summary

Perimeter Shallow Probes [1]																		
Location	**Probe # 1**		**Probe # 1.5**		**Probe # 1.5P**		**Probe # 2**		**Probe # 3**		**Probe # 4**		**Probe # 5**		**Probe # 6**		**Probe # 7**	
Date	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**Monitoring Elevation**		**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**
7/24/2010	0.00/ -	0.00	-	-	**4471.00**		0.00/ -	0.02	0.00/ -	0.14	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00
10/11/2010	0.00/ -	0.00	-	-	**Depth below ground**		0.00/ -	0.00	0.00/ -	0.11	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.035	0.00/ -	0.00
11/8/2010	0.00/ -	0.10	-	-	**= 6.8'**		0.00/ -	0.06	0.00/ -	4.81	0.00/ -	0.79	0.00/ -	35.63	0.00/ -	0.82	0.00/ -	0.00
12/7/2010	0.00/ -	0.00	-	-	**BZ/AGS**	**SG**	0.00/ -	0.00	0.00/ -	0.11	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00
1/11/2011	0.00/ -	3.14	-	-	-	-	0.00/ -	0.03	0.00/ -	1.03	0.00/ -	0.00	0.00/ -	8.43	0.00/ -	1.61	0.00/ -	0.00
2/14 &17/2011	0.00/ -	16	-	-	-	-	0.00/ -	174	0.00/ -	592	0.00/ -	365	0.00/ -	340	0.00/ -	92	0.00/ -	47
3/7 & 8/2011	0.00/ -	0.00	-	-	-	-	0.00/ -	15	0.00/ -	47	0.00/ -	89	0.00/ -	139	0.00/ -	0.23	0.00/ -	0.00
4/6/2011	0.00/ -	0.00	-	-	-	-	0.00/ -	7.93	0.00/ -	7.07	0.00/ -	2.07	0.00/ -	12	0.00/ -	0.02	0.00/ -	0.01
5/10/2011	0.00/ -	0.00	-	-	-	-	0.00/ -	0.05	0.00/ -	0.04	0.00/ -	0.03	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00
6/8/2011	0.00/ -	0.00	-	-	-	-	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00
7/6 & 7/7/2011	0.00/ -	0.02	-	-	-	-	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00
7/27 & 7/28/11	0.00/ -	0.00	-	-	-	-	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00
8/10/2011	0.00/0.00	0.00	-	-	-	-	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
9/8/2011	0.00/0.00	0.01	-	-	-	-	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.01
10/5/2011	0.00/0.00	0.00	-	-	-	-	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
11/10/2011	0.00/0.00	0.42	-	-	-	-	0.00/0.00	0.12	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
11/14/2011	-	-	0.00/0.00	832	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/15/2011	0.00/0.00	0.14	0.00/0.00	792	-	-	0.00/0.00	140	-	-	-	-	-	-	-	-	-	-
11/17/2011	0.00/0.00	0.28	0.00/0.00	1,000+	-	-	0.00/0.00	233	0.00/0.00	1.05	0.00/0.00	0.06	0.00/0.00	1.74	0.00/0.00	0.05	0.00/0.00	0.01
11/21 & 11/22/2011	0.00/0.00	0.04	0.00/0.00	1,000+	-	-	0.00/0.00	233	0.00/0.00	0.69	0.00/0.00	0.07	0.00/0.00	0.11	0.00/0.00	0.00	-	-
11/23/2011	0.00/0.00	0.03	0.00/0.00	685	-	-	0.00/0.00	99	0.00/0.00	0.11	0.00/0.00	0.03	0.00/0.00	0.04	0.00/0.00	0.00	-	-
11/28/2011	0.00/0.00	1.97	0.00/0.00	918	-	-	0.00/0.00	22	0.00/0.00	0.05	0.00/0.00	0.00	-	-	-	-	-	-
12/2/2011	0.00/0.00	3.49	0.00/0.00	919	-	-	0.00/0.00	9.33	0.00/0.00	0.06	0.00/0.00	0.00	-	-	-	-	-	-
12/5/2011	0.00/0.00	3.51	0.00/0.00	325	-	-	0.00/0.00	6.57	0.00/0.00	0.08	0.00/0.00	0.04	0.00/0.00	0.00	-	-	-	-
12/8/2011	0.00/0.00	3.19	0.00/0.00	457	-	-	0.00/0.00	3.47	0.00/0.00	0.07	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
12/13/2011	0.00/0.00	8.33	0.00/0.00	499	-	-	0.00/0.00	5.80	0.00/0.00	0.06	0.00/0.00	0.00	-	-	-	-	-	-
12/19/2011	0.00/0.00	2.88	0.00/0.00	436	0.00/0.00	-	0.00/0.00	3.43	0.00/0.00	0.00	-	-	-	-	-	-	-	-
12/21/2011	-	-	0.00/0.00	1,106	0.00/0.00	3,804	-	-	-	-	-	-	-	-	-	-	-	-
12/27/2011	0.00/0.00	3.74	0.00/0.00	830	-	-	0.00/0.00	20	0.00/0.00	0.00	-	-	-	-	-	-	-	-
1/5/2012	0.00/0.00	0.23	0.00/0.00	860	0.00/0.00	889	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
1/10/2012	0.00/0.00	0.41	0.00/0.00	690	-	-	0.00/0.00	5.35	0.00/0.00	0.16	0.00/0.00	0.00	-	-	-	-	-	-

Breathing Zone [BZ] and Average Soil Gas [SG] readings in ppm.

[1] Perimeter shallow probes except the location and depth of probe 1.5P correspond to the last identified location of the east perimeter pipe during excavation on November 2, 2011.

Table 3.19 Pond 15S Soil Gas Monitoring Results Summary

Perimeter Shallow Probes																
Location	**Probe # 8**		**Probe # 9**		**Probe # 10**		**Probe # 11**		**Probe # 12**		**Probe # 13**		**Probe # 14**		**Probe # 15**	
Date	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**
7/24/2010	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.04	0.00/ -	0.05	0.00/ -	127	0.00/ -	34	0.00/ -	1.08	0.00/ -	0.00
10/11/2010	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.01	0.00/ -	16	0.00/ -	0.00	0.00/ -	51	0.00/ -	1.58
11/8/2010	0.00/ -	1.03	0.00/ -	0.57	0.00/ -	0.03	0.00/ -	0.34	0.00/ -	20	0.00/ -	1.86	0.00/ -	250	0.00/ -	60
12/7/2010	0.00/ -	0.00	0.00/ -	0.06	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	1.82	0.00/ -	0.00	0.00/ -	109	0.00/ -	0.00
1/11/2011	0.00/ -	0.46	0.00/ -	0.09	0.00/ -	0.00	0.00/ -	0.23	0.00/ -	12	0.00/ -	0.00	0.00/ -	208	0.00/ -	1.06
2/14 &17/2011	0.00/ -	68	0.00/ -	0.16	0.00/ -	0.05	0.00/ -	0.02	0.00/ -	14	0.00/ -	0.02	0.00/ -	387	0.00/ -	147
3/7 & 8/2011	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.03	0.00/ -	0.27	0.00/ -	12	0.00/ -	0.01	0.00/ -	30	0.00/ -	0.13
4/6/2011	0.00/ -	0.01	0.00/ -	0.01	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.24	0.00/ -	0.00	0.00/ -	6.91	0.00/ -	0.04
5/10/2011	0.00/ -	0.01	0.00/ -	0.01	0.00/ -	0.01	0.00/ -	0.00	0.00/ -	4.94	0.00/ -	0.01	0.00/ -	9.93	0.00/ -	0.00
6/8/2011	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00
7/6 & 7/7/2011	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.02
7/27 & 7/28/11	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00
8/10/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
9/8/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
10/5/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.54	0.00/0.00	0.00	0.00/0.00	0.00
11/10/2011	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.05
11/17/2011	0.00/0.00	0.02	0.00/0.00	0.04	0.00/0.00	0.05	0.00/0.00	0.01	0.00/0.00	0.40	0.00/0.00	0.00	0.00/0.00	0.03	0.00/0.00	0.02
11/21 & 11/22/2011	-	-	-	-	-	-	-	-	-	-	-	-	0.00/0.00	0.00	0.00/0.00	0.02
11/23/2011	-	-	-	-	-	-	-	-	-	-	-	-	0.00/0.00	0.00	0.00/0.00	0.04
11/28/2011	0.00/0.00	0.00	0.00/0.00	0.03	0.00/0.00	0.04	0.00/0.00	0.06	0.00/0.00	0.81	0.00/0.00	0.05	0.00/0.00	0.03	0.00/0.00	0.18
12/2/2011	-	-	-	-	-	-	-	-	-	-	0.00/0.00	0.00	0.00/0.00	0.02	0.00/0.00	0.12
12/5/2011	-	-	-	-	-	-	-	-	-	-	0.00/0.00	0.00	0.00/0.00	0.05	0.00/0.00	0.63
12/8/2011	0.00/0.00	0.00	0.00/0.00	0.06	0.00/0.00	0.01	0.00/0.00	0.00	0.00/0.00	0.75	0.00/0.00	0.00	0.00/0.00	0.06	0.00/0.00	1.51
12/13/2011	-	-	-	-	-	-	-	-	-	-	0.00/0.00	0.00	0.00/0.00	0.11	0.00/0.00	4.27
12/19/2011	-	-	-	-	-	-	-	-	-	-	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	2.08
12/27/2011	-	-	-	-	-	-	-	-	-	-	0.00/0.00	0.00	0.00/0.00	0.05	0.00/0.00	1.73
1/5/2012	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.04	0.00/0.00	0.02
1/10/2012	-	-	-	-	-	-	-	-	-	-	-	-	0.00/0.00	0.00	0.00/0.00	0.03

Breathing Zone [BZ] and Average Soil Gas [SG] readings in ppm.

Table 3.19 Pond 15S Soil Gas Monitoring Results Summary

Step-Out Probes																		
Location	**Probe # 1A**		**Probe # 1.5A**		**Probe # 6A**		**Probe # 9A**		**Probe # 14A**		**Probe # LS-1 A**		**Probe # LS-1 B**		**Probe # LS-2 A**		**Probe # LS-2 B**	
Monitor Elevation	4468.9		4470.9		4468.9		4468.9		4468.9		4463.8		4463.8		4470.2		4470.2	
Depth Below Ground Surface (ft)	3.5		1.5		3.00		6.50		6.50		3.00		3.00		3.50		3.50	
Date	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**	**BZ/AGS**	**SG**
7/27 & 7/28/11	0.00/ -	0.00	-	-	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00	0.00/ -	0.00
8/10/2011	0.00/0.00	0.00	-	-	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00	0.00
9/8/2011	0.00/0.00	0.00	-	-	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
10/5/2011	0.00/0.00	0.00	-	-	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
11/10/2011	0.00/0.00	0.00	-	-	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
11/14/2011	-	-	0.00/0.00	449	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/15/2011	0.00/0.00	0.09	0.00/0.00	178	-	-	-	-	-	-	0.00/0.00	23	0.00/0.00	23	-	-	-	-
11/17/2011	0.00/0.00	0.00	0.00/0.00	3.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	3.35	0.00/0.00	3.29	0.00/0.00	0.00	0.00/0.00	0.00
11/21 & 11/22/2011	0.00/0.00	0.01	0.00/0.00	0.48	0.00/0.00	0.00	-	-	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.01	-	-	-	-
11/23/2011	0.00/0.00	0.00	0.00/0.00	0.26	0.00/0.00	0.00	-	-	0.00/0.00	0.00	0.00/0.00	0.20	0.00/0.00	0.10	-	-	-	-
11/28/2011	0.00/0.00	0.03	0.00/0.00	0.05	-	-	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.04	0.00/0.00	0.03	-	-	-	-
12/2/2011	0.00/0.00	0.01	0.00/0.00	0.00	-	-	-	-	0.00/0.00	0.00	0.00/0.00	39	0.00/0.00	5.63	-	-	-	-
12/5/2011	0.00/0.00	0.07	0.00/0.00	1.67	-	-	-	-	0.00/0.00	0.08	0.00/0.00	3.51	0.00/0.00	0.56	-	-	-	-
12/8/2011	0.00/0.00	0.00	0.00/0.00	0.17	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00
12/13/2011	0.00/0.00	0.00	0.00/0.00	0.05	-	-	-	-	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.00	-	-	-	-
12/19/2011	0.00/0.00	0.00	0.00/0.00	0.00	-	-	-	-	0.00/0.00	0.00	0.00/0.00	0.01	0.00/0.00	0.00	-	-	-	-
12/21/2011	-	-	0.00/0.00	39.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/27/2011	0.00/0.00	0.04	0.00/0.00	0.55	-	-	-	-	0.00/0.00	0.05	0.00/0.00	16.00	0.00/0.00	3.43	-	-	-	-
1/5/2012	0.00/0.00	0.58	0.00/0.00	0.29	0.00/0.00	0.00	0.00/0.00	0.00	0.00/0.00	0.07	0.00/0.00	0.00	0.00/0.00	0.14	0.00/0.00	0.00	0.00/0.00	0.00
1/10/2012	0.00/0.00	0.00	0.00/0.00	0.02	-	-	-	-	0.00/0.00	0.00	0.00/0.00	34	0.00/0.00	111	-	-	-	-

Breathing Zone [BZ] and Average Soil Gas [SG] readings in ppm.

Table 3.20 Pond 15S TMP Monitoring Results Summary

Location	TMP 01		TMP 02		TMP 03		TMP 04		TMP 05		TMP 06		TMP 07		TMP 08		TMP 09		TMP 10		Pond
Date	BZ	Source	BZ	Source	BZ	Source	BZ	Source	BZ	Source	BZ	Source	BZ	Source	BZ	Source	BZ	Source	BZ	Source	Average
6/30/2010	-	150,472	-	158,658	-	NS	-	NS	-	141,986	-	NS	-	NS	-	NS	-	NS	-	NS	150,372
8/5 to 9/2010	0.00	141,092	0.00	84,286	-	NS	-	NS	0.00	68,282	0.00	75,694	0.00	169,701	-	NF	-	NF	-	NF	107,811
10/18 & 19/2010	0.00	142,423	0.00	128,402	0.00	NF	0.00	NF	0.00	78,524	0.00	34,803	0.00	55,761	0.00	17,904	0.00	NF	0.00	NF	76,303
11/15 & 16/2010	0.00	33,875	0.00	40,478	0.00	NF	0.00	NF	0.00	49,482	0.00	74,721	0.00	42,443	0.00	16,773	0.00	NF	0.00	NF	36,825
12/14 & 15/2010	0.00	67,675	0.00	70,531	0.00	NF	0.00	NF	0.00	57,972	0.00	103,199	0.00	16,530	0.00	14,439	0.00	NF	0.00	NF	55,058
1/10 to 13/2011	0.00	135,605	0.00	89,439	0.00	NF	0.00	NF	0.00	72,752	0.00	125,988	0.00	117,305	0.00	6,439	0.00	NF	0.00	NF	91,255
2/16 to 18/2011	0.00	160,025	0.00	151,385	0.00	NF	0.00	NF	0.00	68,456	0.00	105,672	0.00	88,823	0.00	2,165	0.00	NF	0.00	NF	96,088
3/7 to 3/9/2011	0.00	139,893	0.00	138,760	0.00	NF	0.00	2,357	0.00	61,361	0.00	98,538	0.00	100,418	0.00	1,453	0.00	NF	0.00	NF	77,540
4/1 to 4/5/2011	0.00	112,256	0.00	156,813	0.00	NF	0.00	7,630	0.00	55,987	0.00	82,739	0.00	88,669	0.00	403	0.00	NF	0.00	NF	72,071
5/9 & 5/10/2011	0.00	14,863	0.00	148,299	0.00	NF	0.00	NF	0.00	46,814	0.00	92,660	0.00	106,822	0.00	NF	0.00	NF	0.00	NF	81,892
6/7 & 6/9/2011	0.00	NF	0.00	160,671	0.00	NF	0.00	NF	0.00	39,735	0.00	66,436	0.00	97,853	0.00	NF	0.00	NF	0.00	NF	91,174
7/7, 7/11 & 7/12/2011	0.00	NF	0.00	131,746	0.00	NF	0.00	NF	0.00	27,832	0.00	42,971	0.00	64,731	0.00	NF	0.00	NF	0.00	NF	66,820
8/9 & 8/10/2011	0.00	NF	0.00	116,394	0.00	NF	0.00	NF	0.00	27,611	0.00	33,155	0.00	61,689	0.00	NF	0.00	NF	0.00	NF	59,712
9/7 to 9/12/2011	0.00	NF	0.00	134,084	0.00	NF	0.00	NF	0.00	18,943	0.00	25,202	0.00	59,954	0.00	NF	0.00	NF	0.00	NF	59,546
10/4 to 10/6/2011	0.00	NF	0.00	124,260	0.00	NF	0.00	NF	0.00	27,960	0.00	16,550	0.00	44,971	0.00	NF	0.00	NF	0.00	NF	53,435
11/8 to 11/10/2011	0.00	NF	0.00	129,096	0.00	NF	0.00	NF	0.00	26,330	0.00	10,253	0.00	33,699	0.00	NF	0.00	NF	0.00	NF	49,845
12/7 to 12/12/2011	0.00	NF	0.00	105,178	0.00	NF	0.00	NF	0.00	47,389	0.00	15,713	0.00	37,030	0.00	NF	0.00	NF	0.00	NF	51,328
1/5 to 1/9/2012	0.00	NF	0.00	113,013[(1)]	0.00	NF	0.00	NF	0.00	47,811	0.00	11,632	0.00	41,755	0.00	NF	0.00	NF	0.00	NF	67,526

Breathing Zone (BZ) and Source Gas Concentrations in ppm.

NF= No flow, no source gas PH3 measurement.

Notes:

June 30, 2010 results from GES units operating at TMPs 1, 2 and 5, other TMPs not monitored.

August 8 to 9, 2010 results measured or not sampled (NS) per Site-Wide Gas Assessment Work Plan.

(1) Average calculated source gas from 1/5 to 9/2012 for the four GES units extracting from TMP 2.

4.0 EVALUATION OF MONITORING RESULTS

As described in the *Assessment Study Work Plan*, the monitoring data sets for individual locations and similarly grouped locations fall into two categories: 1) primarily or entirely non-detected results (0.00 ppm PH3), for example the facility fenceline monitoring and appurtenance monitoring results, and 2) primarily or entirely detected results, for example the Pond 16S TMP results. Except as noted in Section 3.0, the tabulated monitoring results from the *Air Monitoring Plan*, interim gas extraction work plans and *Assessment Study Work Plan* are provided in Tables 3.1 through 3.20. In order to complete the data evaluations presented here, monitoring results through January 13, 2012 were used. Because all of the facility boundary monitoring results were 0.00 ppm PH3, those results are not evaluated or discussed further in this section. Evaluation of the monitoring data for individual ponds is presented in Sections 4.1 through 4.4. An evaluation of the perimeter pipe GOPC sampling results for all of the RCRA ponds is presented in Section 4.5.

4.1 PONDS 8S, 8E, 9E AND THE PHASE IV PONDS

As presented in Tables 3.4 to 3.7, the perimeter surface scan and appurtenance monitoring (leak detection and ambient air) PH3 results for Ponds 8S, 8E, and the Phase IV ponds were entirely non-detect (0.00 ppm). The perimeter surface scan PH3 results were entirely non-detect and appurtenance monitoring PH3 results were primarily non-detect (only 5 readings were 0.02 ppm) for Pond 9E. Therefore, graphical or statistical evaluation of this data would not be meaningful and was not performed. Qualitatively, these results indicate a very low potential for PH3 release to ambient air at concentrations that would represent a potential threat to human health and the environment.

The soil gas monitoring PH3 results for Pond 8E were predominantly non-detect (0.00 ppm). All 45 breathing zone readings associated with the soil gas monitoring were 0.00 ppm PH3 (Table 3.8), and 37 of the 45 (82%) of the soil gas probe results were 0.00 ppm PH3. Four of the 8 non-zero readings were recorded at Pond 8E soil gas probe 1, with a maximum result of 4.33 ppm PH3 during November 2010. Two non-zero readings (0.01 and 0.16 ppm) were recorded at soil gas probe 6, and only a single non-zero reading was recorded at each of soil gas probes 4 and 5 (0.09 and 0.05 ppm, respectively). Graphical or statistical evaluation of this data would not be meaningful and was not performed. Qualitatively, there was no trend in the soil gas monitoring results at probe 1, and the few detected soil gas results did not correlate to detectable PH3 in ambient air at the soil gas probe locations during the monitoring.

There were 3 PH3 values for the perimeter pipe PH3 concentrations each for Ponds 8S, 9E and the Phase IV ponds (one result from the site-wide gas assessment and two screening level PH3 results obtained during the 2Q and 3Q 2011 GOPC sampling). Although three values for each

pond does not allow for significant statistical power, the average and standard deviation for the perimeter pipe PH3 concentration was calculated as shown below.

Pond	Date	PH3 concentration	Average	Std Dev	Ave ± Std Dev
8S	7/26/2010	978	912.0	173.7	738.3/1,085.7
	5/18/2011	1,043			
	8/18/2011	715			
9E	7/27/2010	0.00	0.0	NC	NC
	5/23/2011	0.00			
	8/17/2011	0.00			
Phase IV ponds 11S	7/29/2010	15.67	24.9	8.0	16.9/32.9
	5/18/2011	30			
	8/16/2011	29			
12S	7/29/2010	732	1,058.7	382.2	676.5/1,440.9
	5/19/2011	1,479			
	8/16/2011	965			
13S	7/27/2010	0.06	0.1	NC	NC
	5/19/2011	0.17			
	8/17/2011	0.03			
14S	7/27/2010	0.00	0.0	NC	NC
	5/23/2011	0.00			
	8/17/2011	0.01			

NC means not calculated

The results and average for Ponds 9E, 13S and 14S were uniformly zero or near zero, such that further evaluation of the results is unnecessary. The average plus and minus one standard deviation were calculated for Ponds 8S, 11S and 12S as a semi-quantitative evaluation of the distribution of the results. As shown above, the minimum and maximum results for Ponds 8S, 11S and 12S fall within (or close to within) the average plus/minus one standard deviation. Qualitatively, the results indicate the PH3 concentrations are relatively uniform over the one year of monitoring data and there is no trend (either increasing or decreasing).

An evaluation of the distribution of the thirteen Pond 8E perimeter pipe PH3 monitoring results was performed (results are presented on Table 3.9). In summary,

- The thirteen result (n = 13) data set fails normality tests (Shapiro-Wilks and probability plot tests);
- The data point from the area-wide gas assessment (1,800 ppm PH3, July 29, 2010) tests as an outlier using Dixon's outlier test;

- After removing the 1,800 ppm value, the twelve result (n = 12) data set tests as normally distributed using Shapiro-Wilks and probability plot tests;
- The log-transformed n = 13 data set tests as normally distributed using Shapiro-Wilks and probability plot tests (i.e., n = 13 data set tests as lognormally distributed).

In conjunction with the distribution evaluation, the data set was evaluated for trend using the non-parametric Mann-Kendall test, two-sided at the 95% confidence level ($\alpha = 0.05$). The Mann-Kendall test for trend is recommended as a robust non-parametric test for trends in data over time. For the "original" thirteen result data set and the twelve result data set (outlier removed), the critical Z-score equals 1.97 (if $|Z| > 1.97$, then $p < 0.05$ and trend is significant). The results of the Mann-Kendall trend tests are summarized below:

- The original 13 value data set shows no significant trend (Z-score of -1.04, p-value of 0.30); and,
- The 12 value data set also shows no significant trend (Z-score of -0.34, p-value of 0.73).

The average and standard deviation for the twelve result (n = 12) data set of perimeter pipe PH3 concentration were calculated as 700 ppm and 186 ppm, respectively. Figure 4-1 shows a graph of the Pond 8E perimeter pipe monitoring results, including the 1,800 ppm PH3 value from the site-wide gas assessment, and the average and average plus / minus one standard deviation for the n = 12 data set. In summary, the Pond 8E perimeter pipe monitoring results are normally or lognormally distributed depending on whether the site-wide gas assessment result of 1,800 ppm is rejected as an outlier or retained, and there is no evidence of a trend at 95% confidence regardless of the status of the site-wide result.

Overall, average PH3 concentrations ranged from 0 to about 1,060 ppm (Pond 12S) in perimeter piping at Ponds 8S, 8E, 9E and the Phase IV ponds. The perimeter piping at Pond 8E averaged 700 ppm and did not correlate to any spatially or temporally consistent pattern of elevated PH3 in soil gas. The perimeter surface scan and appurtenance monitoring results at Ponds 8S, 8E, 9E and the Phase IV ponds indicate a very low potential for PH3 release to ambient air at concentrations that would represent a potential threat to human health and the environment.

4.2 POND 16S

As stated in the *Assessment Study Work Plan*, at the end of the one-year compliance demonstration period in November 2010, Pond 16S was a pond at which (1) the PH3 "reservoir" beneath the final cap had been decreased below the Pond 16S UAO performance objective of 10% of the LEL in TMPs, (2) the perimeter gas collection piping PH3 concentration (measured at the south standpipe) was less than 10 ppm, and (3) perimeter soil gas PH3 concentrations were essentially zero at all soil gas probe locations. The concept for the assessment monitoring at Pond 16S during the study period was to evaluate the "rebound" of PH3 concentrations beneath the final cap in order to develop a relationship between PH3 concentrations in TMPs, pond

perimeter piping, perimeter soil gas and the potential for detection (release) of PH3 in ambient air at levels that could represent a risk to human health and the environment.

Assessment Study Work Plan Figure 2-1showed the predicted average TMP PH3 concentration increase over a 52-week period following shut down of the GETS, using the estimated Pond 16S net generation rate of 5 lbs/day. The figure also showed the estimated perimeter piping PH3 concentration lines for the 4:1 and 10:1 average TMP to perimeter piping ratios. The estimated rates of PH3 increase assumed a constant net generation rate and uniform distribution (dispersion) within the fill pore space beneath the final cap, and should be viewed as preliminary. The initial Pond 16S TMP and perimeter pipe monitoring results (November 30, 2010 through July 6, 2011) were also plotted on *Assessment Study Work Plan* Figure 2-1 and showed that the rate of increasing concentrations in TMPs and perimeter piping were slower than the preliminary estimate.

Figure 4-2 shows the Pond 16S average TMP and average and individual standpipe perimeter pipe monitoring results for November 30, 2010 through January 3, 2012 (58 weeks), plotted with the preliminary predicted trends from the *Assessment Study Work Plan* Figure 2-1. The 58-week period of monitoring since the Pond 16S GETS was shut down shows a much lower rate of increasing concentrations in TMPs and perimeter piping than the preliminary estimate.

Figure 4-3 shows the Pond 16S average TMP and average and individual standpipe perimeter pipe monitoring results for the study period on a scale that better depicts the trends in the data. As shown on the figure, the average TMP concentration follows an obvious increasing trend. An exponential regression using Microsoft Excel provides the best fit for the TMP data and yields an exceptionally high coefficient of prediction (R^2) of 0.99. Visually, the average and individual perimeter pipe standpipe concentration follow an increasing trend.

The average TMP PH3 concentration trend is also representative of individual TMPs. As shown on Figure 4-4, the average TMP concentration trend line lies very close to the TMPs 7 and 8 (south side) trends. The TMP 1 (north) and 5 and 6 (south) trend lines are above the average trend and the slope of the increasing trend steepened from December 6 (week 54) to January 3 (week 58). The TMP 2, 3 and 4 (north) trend lines are below the average trend. The average TMP concentration trend is adequate for evaluating the relationship between TMP concentrations and perimeter pipe concentrations.

The Pond 16S perimeter pipe monitoring PH3 monitoring results are shown on Figure 4-5. Visually, the north and east standpipe data show an increasing trend while the south and west standpipe data do not show a trend. The average standpipe concentration trend follows the increasing trend of the north and east standpipe data. A power regression using Microsoft Excel provides the best fit for the average perimeter pipe data, but yields a poor coefficient of prediction (R^2) of 0.39. The results of regression evaluation on the north and south perimeter

pipe data were similar to the average. During development of the *Assessment Study Work Plan*, EPA took the position that bi-monthly (twice per month) monitoring of the Pond 16S perimeter pipe was required in order to develop sufficient data to meet the objective of the study. As a test of the value of the bi-monthly monitoring, the monthly perimeter pipe monitoring data corresponding to the monthly TMP monitoring data (and removing the second monthly perimeter pipe data) was evaluated graphically as shown on Figure 4-5b. The monthly perimeter pipe data yields the same visual trends, very similar average and average trend, and similar albeit slightly lower R^2 of 0.32 for a power regression on the average. Both the bi-monthly and monthly perimeter pipe monitoring data exhibit similar event-to-event (or temporal) variability as evidenced by the peaks and troughs in the trend graphs.

Based primarily on observation of GES operations and monitoring during the study period, and assuming an underlying increasing trend in concentrations, the variability of perimeter pipe monitoring results is likely influenced by the trend in barometric pressure preceding the monitoring event. Observationally, higher PH3 concentrations in perimeter pipe are associated with a falling barometer while concentrations tend to decrease during a rising barometer. The attached Figures 4-6a though 4-6d show the barometric pressure leading up to and during the Pond 16S perimeter pipe monitoring performed during June, July, October and November 2011, respectively. Consistent with past observations, a decreasing barometric pressure trend preceded the June 6/7 and October 3/4 monitoring events that correspond to PH3 concentration "peaks" on the perimeter pipe data trend graphs. Note that during the October event, the south standpipe was the last of the four monitored, and the decreasing barometric pressure trend spanned about 48 hours prior to the monitoring. The October 4 result for the south standpipe is the highest recorded PH3 concentration for the south standpipe during the study period. An increasing barometric pressure trend preceded the July 5/6 and November 7/8 monitoring events that correspond to PH3 concentration "troughs" on the perimeter pipe data trend graphs. Similar increasing or decreasing barometric pressure trends were observed prior to the August "peak" and September "trough" in perimeter pipe concentrations, respectively. Note that the monitored PH3 concentration in perimeter pipe appears to be influenced by a changing barometric pressure trend over 24 or more hours prior to monitoring and not the absolute barometric pressure at the time of monitoring.

In addition to the temporal variability of the perimeter pipe monitoring results discussed above, there is variability in the PH3 concentrations between the four standpipes (i.e., spatial variability). Although no flow limitations were observed at any of the standpipes during the perimeter pipe monitoring during the study period, a supplemental investigation was conducted to evaluate if any of the standpipes were experiencing flow restriction that may have influenced the monitoring results. In particular, the west standpipe was suspected as being flow-restricted due to the fact that it consistently had the lowest concentrations among the four standpipes.

On January 9 through 11, 2012, the four Pond 16S standpipes and pipe connecting to the perimeter pipe "T" were probed with Pex pipe and vacuumed as needed with Pex pipe to remove any condensate and/or potential solids. This has become a standard maintenance procedure at standpipes that are suspected to have restricted flow when connected to operational GES units. Following the maintenance procedure, each standpipe was tested for maximum flow (and associated vacuum) using a GES unit. During the maximum flow test, the GES unit is connected to the standpipe following the same procedure as during a routine monitoring event. When the GES unit is started-up, the dilution air valve is wide open and the source gas valve is shut. When the system is fully operational, the source gas valve is opened slowly while checking inlet PH3 and, if within the acceptable range of PH3 concentrations, the dilution air valve is slowly shut until the GES is drawing only from the standpipe. The nominal maximum flow through one GES unit is 60 cubic feet per minute (cfm). The inlet negative pressure (vacuum) is measured during GES operation, which is an indication of resistance within the piping to air flow. The results of the maximum air flow testing performed on January 11, 2012 are summarized below.

Standpipe	**Vacuum (Inches H_20)**	**Flow (cfm)**
West	16.7	59.8
South	81.5	15.5
East	29.0	55.6
North	20.5	61.0

The west, east and north standpipes exhibited flow and pressure drops within the expected range for unobstructed gas extraction from the standpipe. The south standpipe exhibited some flow restriction, but the flow appears adequate for the purpose of obtaining gas flow from the perimeter pipe system at the location during monitoring events. The variability in PH3 concentrations at the standpipes appears to reflect the non-uniform gas distribution in the heterogeneous fill materials under the final cap rather than differences in flow from the perimeter pipe standpipes. Non-uniform spatial distribution of PH3 beneath the pond caps is also observed at the Pond 16S TMPs. While non-uniform between the standpipes, the spatial distribution appears to be consistent as the highest PH3 concentrations in perimeter pipe at Pond 16S have always been found in the north standpipe. A non-uniform but consistent difference in PH3 concentrations is evident in the perimeter pipe at other ponds with multiple standpipes (e.g., Ponds 17 and 18A).

The Pond 16S soil gas monitoring results are shown on Figure 4-7. Phosphine was not detected in the majority of the soil gas monitoring results. When detected PH3 concentrations were low (less than 0.30 ppm), except at probes 5 (south side, near the south standpipe); 10 (north side, near west end); and, 11 and 12 (north side, near the north standpipe). Visually, there is no trend in the data other than the potential increasing trend at probe 11 from November 6 (week 50) to January 3 (week 58). As a check, the data sets from soil gas probes 5, 11 and 12 were evaluated

for trend using the non-parametric Mann-Kendall test, two-sided at the 95% confidence level ($\alpha = 0.05$). The Mann-Kendall test for trend is recommended as a robust non-parametric test for trends in data over time. For these data sets n=14 and the critical Z-score equals 1.97 (if $|Z| > 1.97$, then $p < 0.05$ and trend is significant). The results of the Mann-Kendall trend tests are summarized below:

- Probe 5 shows no significant trend (Z-score of 1.09, p-value of 0.28);
- Probe 11 shows no significant trend (Z-score of 1.35, p-value of 0.18); and,
- Probe 12 shows no significant trend (Z-score of 1.31, p-value of 0.19).

As described above for the perimeter pipe results, the variability of soil gas monitoring results is likely influenced by the trend in barometric pressure preceding the monitoring event. The soil gas results for probes 5 and 11 exhibited a pattern of temporal variability similar to the perimeter pipe monitoring results, although with a much lower magnitude as shown on Figure 4-8. The highest PH3 result for Pond 16S soil gas probes during the study period (8.12 ppm) was recorded at probe 11, located near the north standpipe, when the north standpipe result was about 1,300 ppm during the October 4 and 5, 2011 monitoring event. The PH3 result for soil gas probes 5, located near the south standpipe, was 2.02 ppm when the south standpipe result was about 660 ppm during the October 4 and 5, 2011 monitoring event.

During the study period, PH3 was not detected during any of the perimeter surface scans and appurtenance ambient air and leak detection monitoring events at Pond 16S. Phosphine was not detected inside Pond 16S appurtenances during the inside appurtenances monitoring events except for one event in August 2011 that found very low PH3 levels reported at 0.03, 0.04 and 0.06 ppm, respectively, inside LCDRS sump 2 and cap drainage lift stations 1 and 2.

Overall, the Pond 16S TMP and perimeter pipe PH3 concentration ranges measured during the study period are rebounding much more slowly than originally predicted and have not reached levels that are resulting in significant (greater than 10 ppm) PH3 concentrations or trends in shallow soil gas probes around the perimeter of the pond. The perimeter surface scan and appurtenance monitoring results indicate that the current PH3 concentrations beneath the Pond 16S cap have only a very low potential for PH3 release to ambient air at levels that could represent a potential threat to human health and the environment.

4.3 PONDS 17 AND 18A

Operation of GES units connected to perimeter piping at Ponds 17 and 18A during the assessment study period limits the utility of the monitoring data toward the objective of determining "*the phosphine concentrations which if met or exceeded would trigger additional monitoring and/or phosphine gas extraction and treatment to protect human health and the environment.*" Operation of GES units at these ponds created additional dynamics, most notably an essentially constant (negative) pressure gradient at the standpipe(s) connection to the

perimeter pipe and essentially constant PH3 mass removal from beneath the pond cap. During the periods of GES operation at these ponds, monitoring results were primarily evaluated to assess the effectiveness of gas extraction toward meeting the RCRA Pond UAO performance objectives and, in the case of Pond 17, demonstrating compliance with the RCRA Pond UAO performance objective of maintaining the perimeter pipe PH3 concentration below 2,000 ppm for 12 consecutive months.

The GES units were operated at Pond 17 from October 14, 2010 until December 15, 2011. The monitoring results during this period were primarily evaluated in the context of assessing the effectiveness of gas extraction. The monitoring results summarized below demonstrate that the gas extraction at Pond 17S was highly effective in rapidly reducing PH3 concentrations beneath the cap as monitored in the TMPs and perimeter pipe:

- During October 2010, TMP PH3 concentrations ranged from 3,042 to 30,463 ppm in individual TMPs and averaged 14,368 ppm. Following initiation of GES operation on October 14, 2010, PH3 concentration dropped to an average TMP concentration of 1,544 ppm in December 2010. During November 2011 prior to ceasing GES operation on December 15, 2011, PH3 concentrations ranged from 0.10 to 14 ppm in individual TMPs and averaged 7.05 ppm (refer to Table 3.17).

- During October 2010, PH3 concentration in the perimeter pipe source gas ranged from 3,329 to 18,939 ppm (GES operation began October 14, 2010) and rapidly decreased to a range from 23 to 251 ppm by January 2011. Perimeter pipe standpipe concentrations ranged from 0.00 to 3.37 ppm prior to ceasing GES operation on December 15, 2011 (refer to Table 3.9). Other than the March 2011 perimeter pipe monitoring (during GES operation only at the southwest standpipe), the highest PH3 concentrations were always found in the southwest standpipe which was the rationale for continuing GES extraction from only the southwest standpipe after January 18, 2011.

Gas extraction at Pond 17 was effective in reducing PH3 concentrations in shallow (18 to 24 inches bgs) soil gas about 5 feet outside the final cap anchor trench. As described in Section 3.6, PH3 was detected in all eleven soil gas probes, at concentrations ranging from 0.04 to 628 ppm, during the October 11, 2010 monitoring event. Following initiation of GES operation on October 14, 2010, PH3 concentration dropped and PH3 was not detected in the majority of the subsequent soil gas monitoring events except for sporadic, low PH3 (0.01 to 0.04 ppm) recorded at probes 1 through 9 and an apparently anomalous reading of 0.52 ppm at probe 1 during August 2011 (refer to Table 3.15).

Prior to and throughout GES operation at Pond 17, PH3 was not detected in the breathing zone during any of the soil gas monitoring events, during any of the perimeter surface scans, or during any of the appurtenance ambient air or leak detection monitoring events at Pond 17 (refer to Tables 3.15, 3.3 and 3.13, respectively).

The monitoring results for Pond 18A span pre-GES unit operation, GES operation at the Pond 18A east standpipe from March 1, 2011 until October 5, 2011, and post-GES operation. As was the case for Pond 17, during the period of GES operation monitoring results were primarily evaluated to assess the effectiveness of gas extraction. However, the pre- and post-GES operation monitoring results allow some evaluation of Pond 18S PH3 monitoring data under quasi-steady state conditions.

As shown on Figure 4-9, PH3 concentrations in the south and east perimeter pipe source gas ranged from 3,464 to 7,123 ppm and 17,880 to 19,625 ppm, respectively, prior to GES operation that began on March 1, 2011. During the pre-GES operation and March 3, 2011 (only 2 days after GES operation began) monitoring events, PH3 was detected in nine of the ten shallow soil gas probes at concentrations ranging from 0.01 to over 1,000 ppm (1,000 ppm is the maximum value for the Draeger Pac III PH3 monitor with the "high range" 0 to 1,000 ppm PH3 sensor). Figure 4-10 shows the Pond 18A perimeter pipe and soil gas monitoring data for the period July 2010 through January 13, 2012. During the pre-GES operation period, phosphine was not detected during any of the perimeter surface scans, appurtenance ambient air and breathing zone and ground level (4 to 6 inches ags) readings during the soil gas monitoring events. Phosphine also was not detected during the pre-GES period at any of the appurtenance leak detection monitoring points, except on February 23, 2011, when phosphine was detected at 11.5 ppm at the base of TMP 3. Soil around the base of TMP 3 was re-compacted and phosphine was not detected during follow-up appurtenance ambient air and leak detection monitoring at TMP 3 on February 24, 2011.

During March 2011, the first month of GES operation at the Pond 18A east standpipe, the east standpipe source gas monthly average was about 16,000 ppm PH3 (Figure 4-10) with daily averages in the range of 10,000 to 25,000 ppm (Figure 4-9). During April through June 2011, the east standpipe source gas monthly average increased to the range of about 19,000 ppm PH3 (Figure 4-10) with daily averages in the range of 15,000 to 30,000 ppm (Figure 4-9). By the April 12, 2011 soil gas monitoring event, concentrations had dropped and PH3 was not detected in the majority of the shallow soil gas monitoring events except for sporadic, low PH3 (0.01 to 0.03 ppm) recorded at probes 1, 2, 4 and 5. Other than the very low PH3 readings (0.00 to 0.06 ppm) during the initial two rounds of step-out soil gas probe monitoring on May 4 and 25, 2011, PH3 was not detected in any of the step-out probes at Pond 18A. Phosphine was reported at 1.60 ppm inside cap drainage lift station 1 (LS-01) located at the east end of Pond 18A during the May 2011 monitoring event. During this period, phosphine was not detected during any of the perimeter surface scans, appurtenance ambient air and leak detection monitoring and breathing zone and ground level (4 to 6 inches ags) readings during the soil gas monitoring events.

Beginning in July 2011, the east standpipe source gas monthly average dropped to about 15,500 ppm PH3 (Figure 4-10), with daily averages in the range of 10,000 to 18,000 ppm (Figure 4-9). During July through October 5, 2011, when the GES was idled, the east standpipe source gas

monthly average decreased steadily to about 8,000 ppm PH3 (Figure 4-10), with daily averages in the range of 7,000 to 9,000 ppm (Figure 4-9). During GES operation, the PH3 monitoring results for the Pond 18A south standpipe were relatively stable and ranged from a high of about 7,200 ppm (April 12, 2011) to a low of about 1,800 ppm (October 4, 2011 just before the GES at the east standpipe was idled). Phosphine was not detected in the majority of the shallow soil gas monitoring probes except for sporadic, low PH3 (0.01 to 0.03 ppm) recorded at probes 1, 2, 4, 5 and 8. During this period, phosphine was not detected during any of the perimeter surface scans, appurtenance ambient air and leak detection monitoring and breathing zone and ground level (4 to 6 inches ags) readings during the soil gas monitoring events.

After GES operation was suspended on October 5, 2011, Pond 18A east perimeter pipe PH3 concentrations continued the decreasing July to October 2011 trend and were in the range of 1,200 to 2,500 ppm during December 2011 and January 2012. In the south standpipe, PH3 concentrations also decreased slightly and were in the range of 450 to 550 ppm during December 2011 and January 2012. Other than the readings of 0.19 ppm and 3.68 ppm at soil gas probe 2 during the October 25, 2011 and January 13, 2012 monitoring events, respectively, PH3 was not detected in the majority of the shallow soil gas monitoring probes except for sporadic, low PH3 (0.02 to 0.03 ppm) recorded at probes 1, 2, 3 and 6. Phosphine was not detected in the step-out soil gas probes at Pond 18A. Further, in the period since GES operation was suspended at Pond 18A, phosphine was not detected during any of the perimeter surface scans, appurtenance ambient air and leak detection monitoring and breathing zone and ground level (4 to 6 inches AGS) readings during the soil gas monitoring events.

4.4 POND 15S

Operation of GES units connected to perimeter piping (and TMP 2 beginning on December 9, 2011) at Ponds 15S throughout the assessment study period limits the utility of the monitoring data toward the objective of determining "*the phosphine concentrations which if met or exceeded would trigger additional monitoring and/or phosphine gas extraction and treatment to protect human health and the environment.*" Operation of GES units at Pond 15S and the recently changed location of GES operation to TMP 2 creates additional and variable dynamics, most notably an essentially constant (negative) pressure gradient at the standpipe(s) connection to the perimeter pipe and essentially constant PH3 mass removal from beneath the pond cap. The results of monitoring pursuant to the *Air Monitoring Plan*, *Pond 15S Interim Work Plan Gas Extraction and Treatment* (MWH, 2010i), *RCRA Pond 15S Preliminary Final Design Analysis Report* and recently modified by the *15S Interim Work Plan Addendum A* have been and will continue to be reported in the weekly and monthly progress reports. Similarly, the Pond 15S monitoring results have been and will continue to be evaluated to assess the effectiveness of gas extraction and are not separately evaluated in this Phosphine Assessment Study Report.

4.5 PERIMETER PIPE GOPC RESULTS

The 2Q and 3Q 2011 GOPC (HCN, H2S, and HF) sampling at the perimeter gas collection piping standpipes at Ponds 8S, 8E, 9E, Phase IV, 15S, 16S, 17 and 18A is described in Section 3.2. These 2Q and 3Q 2011results are respectively presented in Tables 3.1 and 3.2.

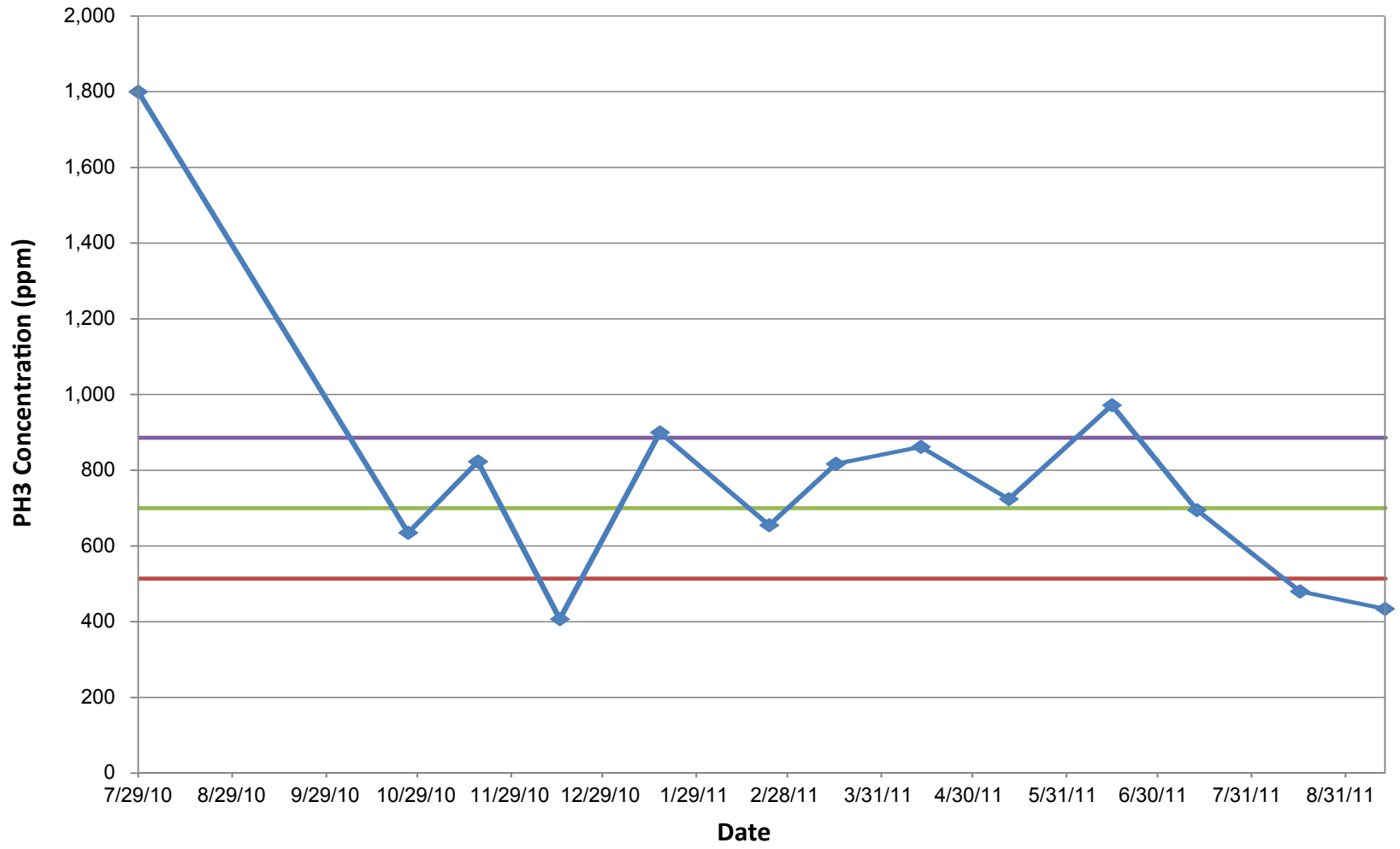
Hydrogen cyanide was not detected above the detection limit of 0.058 ppm in any of the samples. Hydrogen sulfide was only detected in the 3Q sample from the Pond 17 east standpipe, at 0.26 ppm. This was only slightly above the detection limit of 0.24 ppm. Hydrogen sulfide was not detected in any of the other samples.

Of the 18 primary (i.e., not including field QC) samples collected during the 2Q event, HF was detected in the samples from Ponds 8S, 8E, 11S, 12S (and 12S duplicate), 15S west standpipe, 16S north and east standpipes and 18A south standpipe. Hydrogen fluoride was not detected in the samples from the other ponds / standpipes above the 0.198 ppm detection limit. The HF results for Pond 8S (4.12 ppm), Pond 15S west standpipe (3.3 ppm) and Pond 18A south standpipe (3.6 ppm) were slightly above the OSHA permissible exposure limit (PEL) for hydrogen fluoride of 3 ppm as an 8-hour time-weighted average (TWA) concentration (which would be relevant in a 'workplace'), but were far below the NIOSH Immediately Dangerous to Life or Health (IDLH) concentration of 30 ppm.

Of the 18 primary samples collected during the 3Q event, HF was detected in the samples from Ponds 8E, 12S and 15S west standpipe. Hydrogen fluoride was not detected in the samples from the other ponds / standpipes above the 0.198 ppm detection limit. None of the 3Q detected results for HF were above the PEL for hydrogen fluoride of 3 ppm.

As shown on Figure 4-11, the perimeter pipe HF results do not correlate well with PH3 concentrations, with an R^2 of 0.21 for the Microsoft Excel generated linear regression through the data. In addition to the low R^2 value, note that HF was not detected in the sample from the Pond 15S east standpipe, which the highest PH3 concentration (5,613 ppm) during the 2Q event, or from the Pond 18A south standpipe, which the highest PH3 concentration (2,800 ppm) during the 3Q event.

FILE *Fig 4-1 Pond 8E summary stats and chart.ai 30Jan2012*



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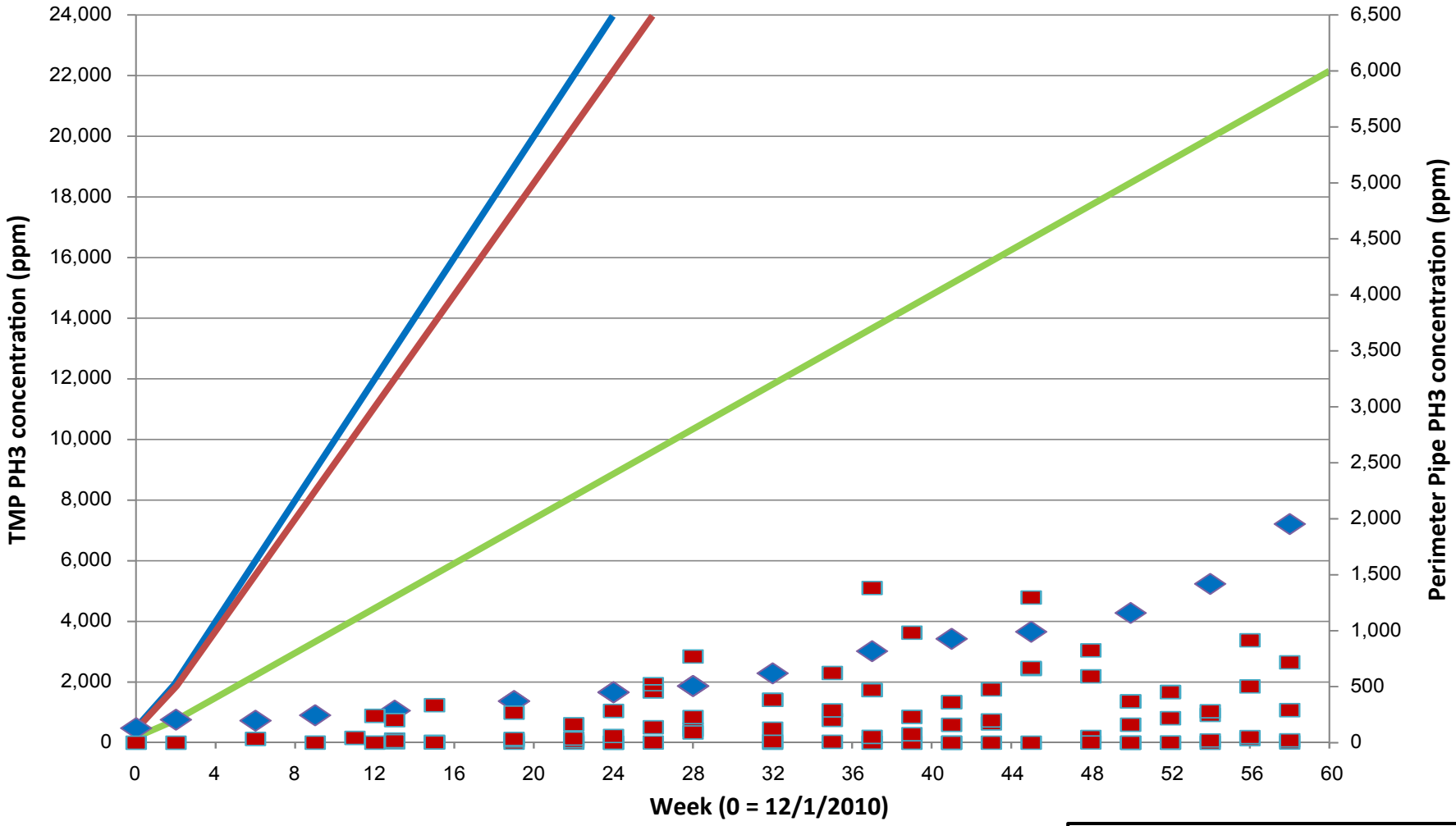
RCRA POND PHOSPHINE ASSESSMENT REPORT

FIGURE 4-1

POND 8E PERIMETER PIPE PHOSPHINE MONITORING RESULTS

FILE *Fig 4-2 16S TMP and perim pipe v original rebound.ai* *30Jan2012*



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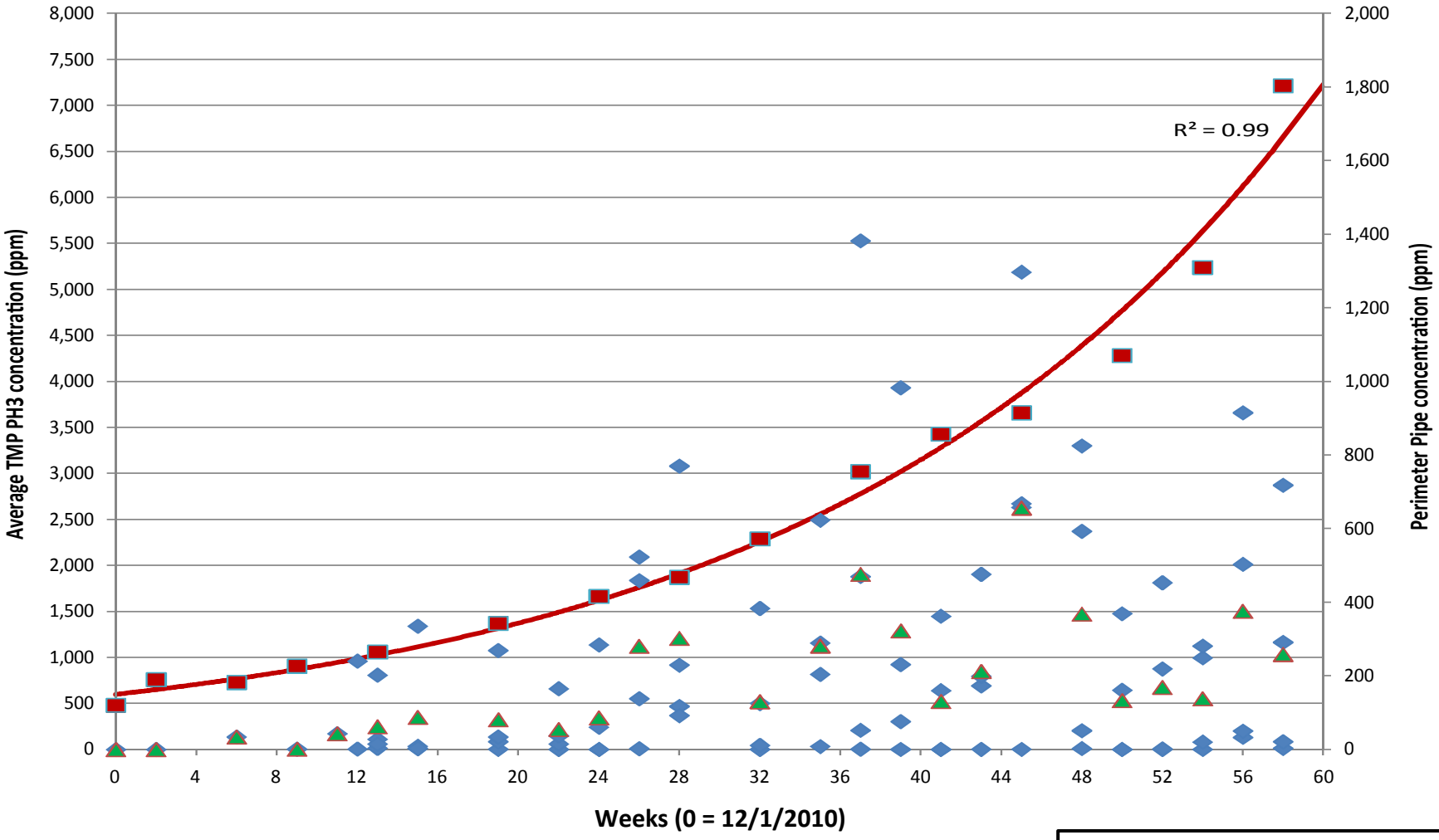
RCRA POND PHOSPHINE ASSESSMENT REPORT

FIGURE 4-2

CONCENTRATION VERSUS TIME POND 16S TMP AND PERIMETER PIPE PREDICTED VS OBSERVED REBOUND

FILE *Fig 4-3 16S TMP ave trend w perim pipe.ai* *30Jan2012*



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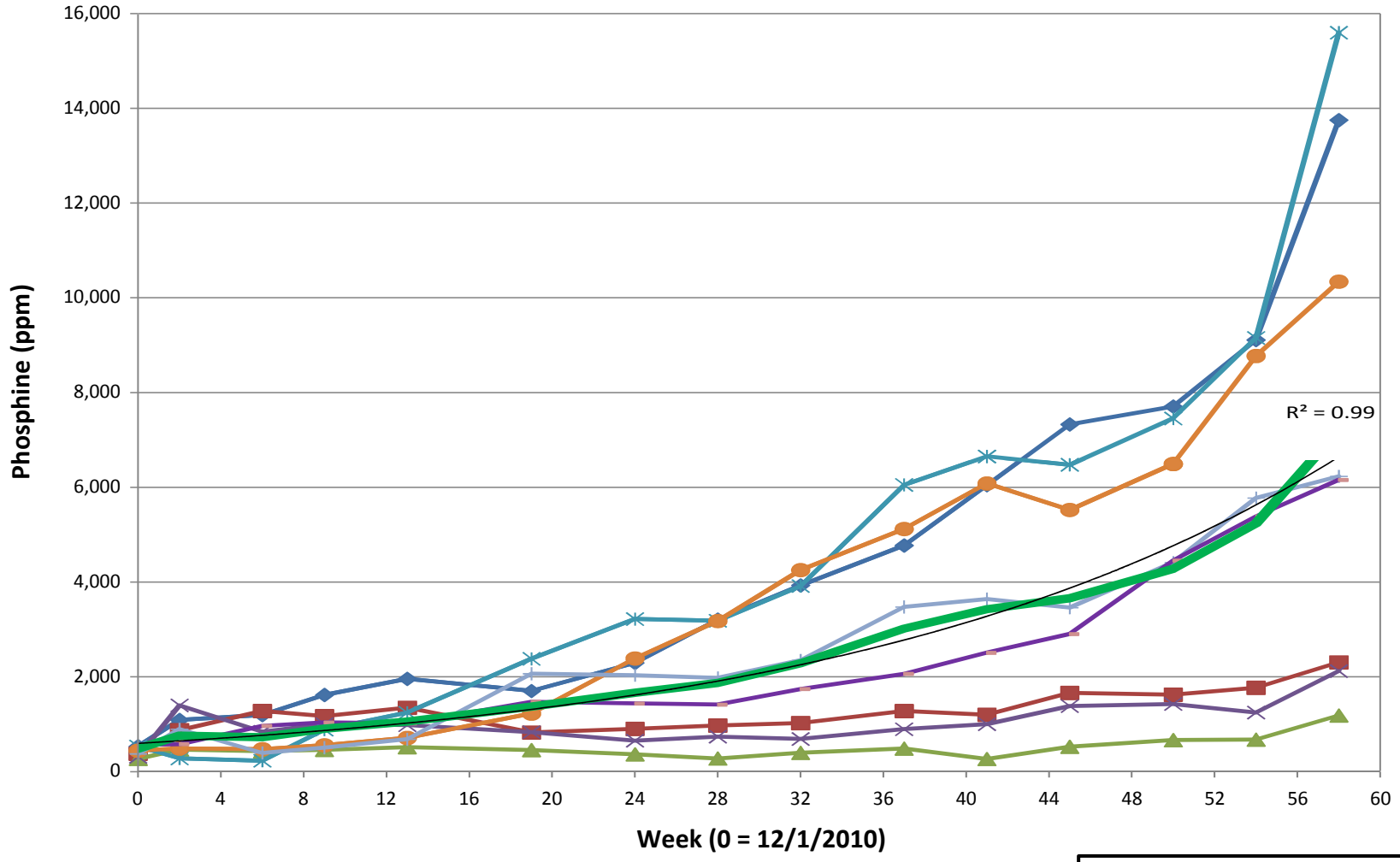
RCRA POND PHOSPHINE ASSESSMENT REPORT

FIGURE 4-3

POND 16S AVERAGE TMP AND PERIMETER INDIVIDUAL AND AVERAGE STANDPIPE PH3 CONCENTRATION

FILE *Fig 4-4 16S individual TMPs and ave trend.ai* *30Jan2012*



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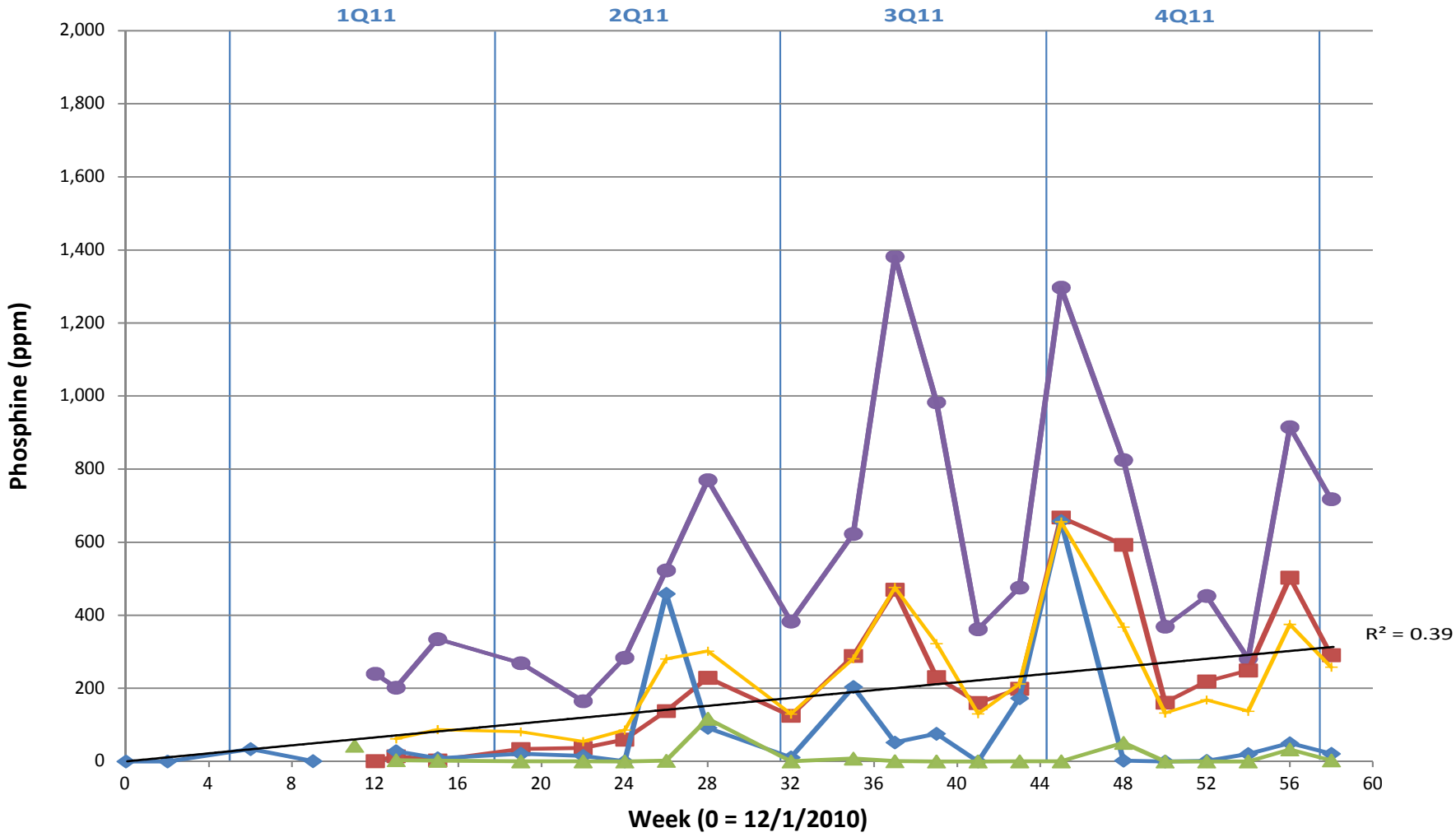
RCRA POND PHOSPHINE ASSESSMENT REPORT

FIGURE 4-4

POND 16S TMP PHOSPHINE CONCENTRATIONS

FILE *Fig 4-5 Perim Pipe trend.ai* *30Jan2012*



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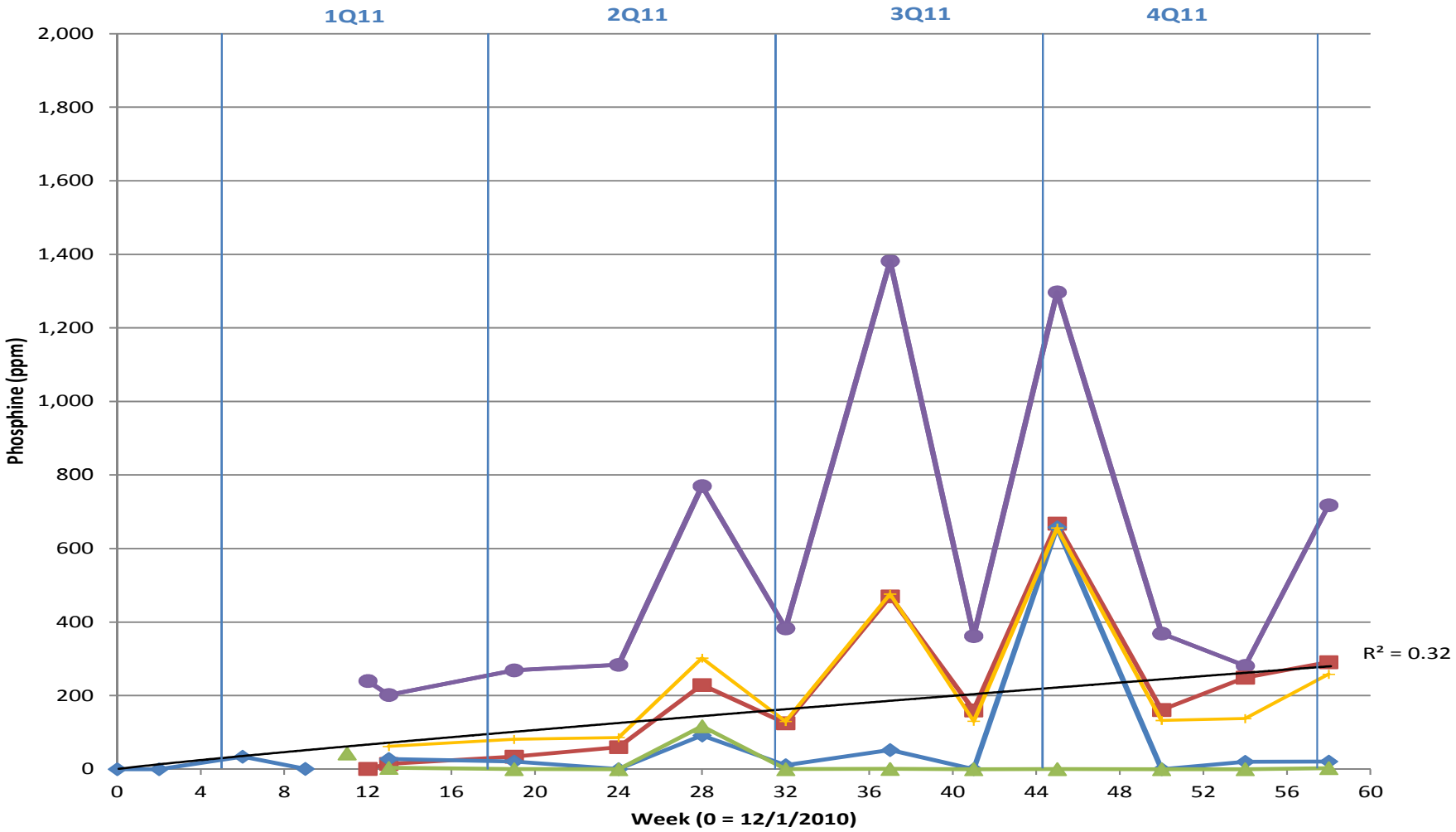
RCRA POND PHOSPHINE ASSESSMENT REPORT

FIGURE 4-5

POND 16S PERIMETER PIPE PHOSPHINE CONCENTRATIONS

FILE *Fig 4-5b Pond 16S Perimeter Pipe Phosphine Conc_Monthly Only.ai 30Jan2012*



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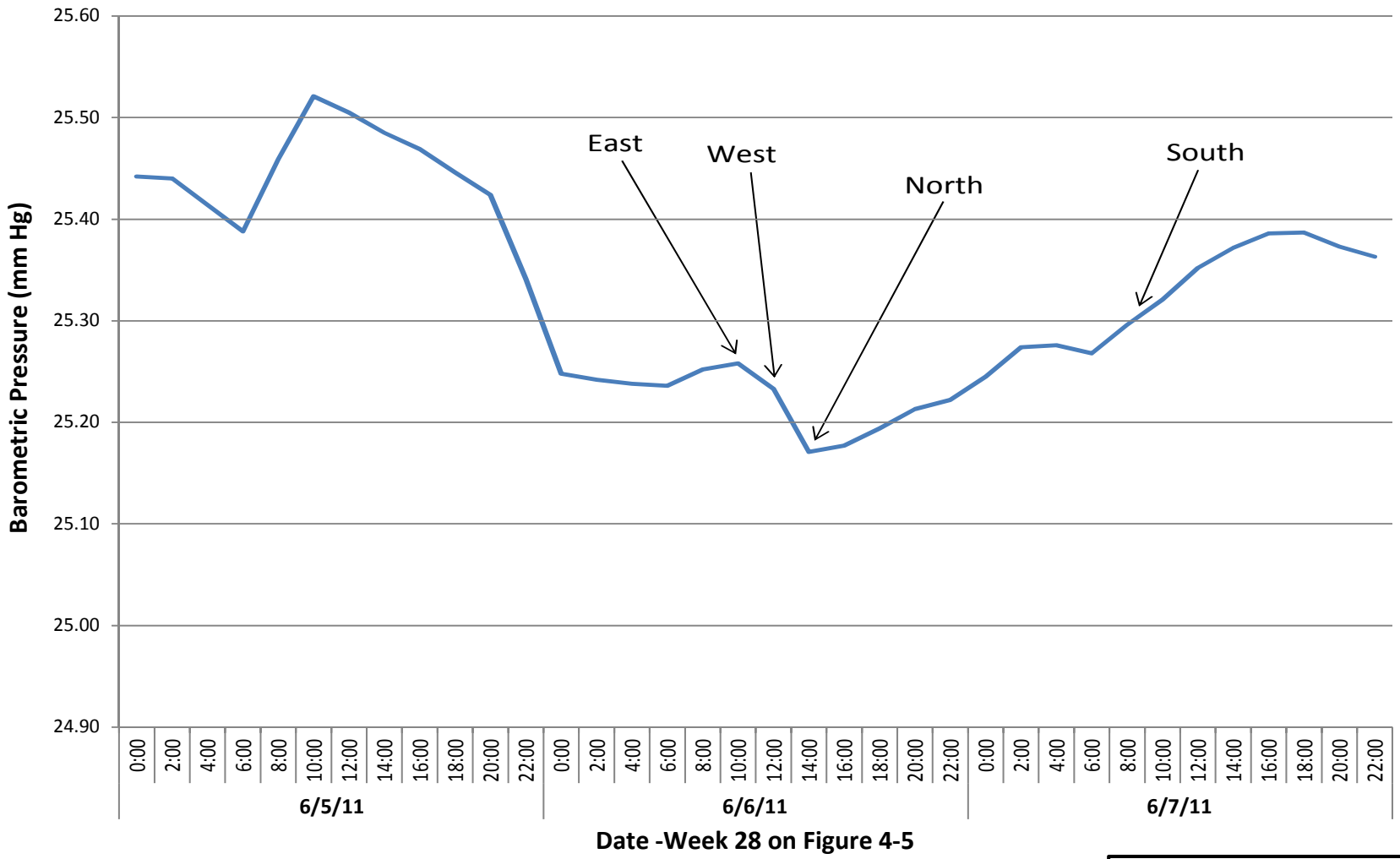
RCRA POND PHOSPHINE ASSESSMENT REPORT

FIGURE 4-5b

POND 16S PERIMETER PIPE PHOSPHINE CONCENTRATIONS (MONTHLY ONLY)

FILE *Fig 4-6a June Pond 16S Perimeter vs BP.ai 30Jan2012*



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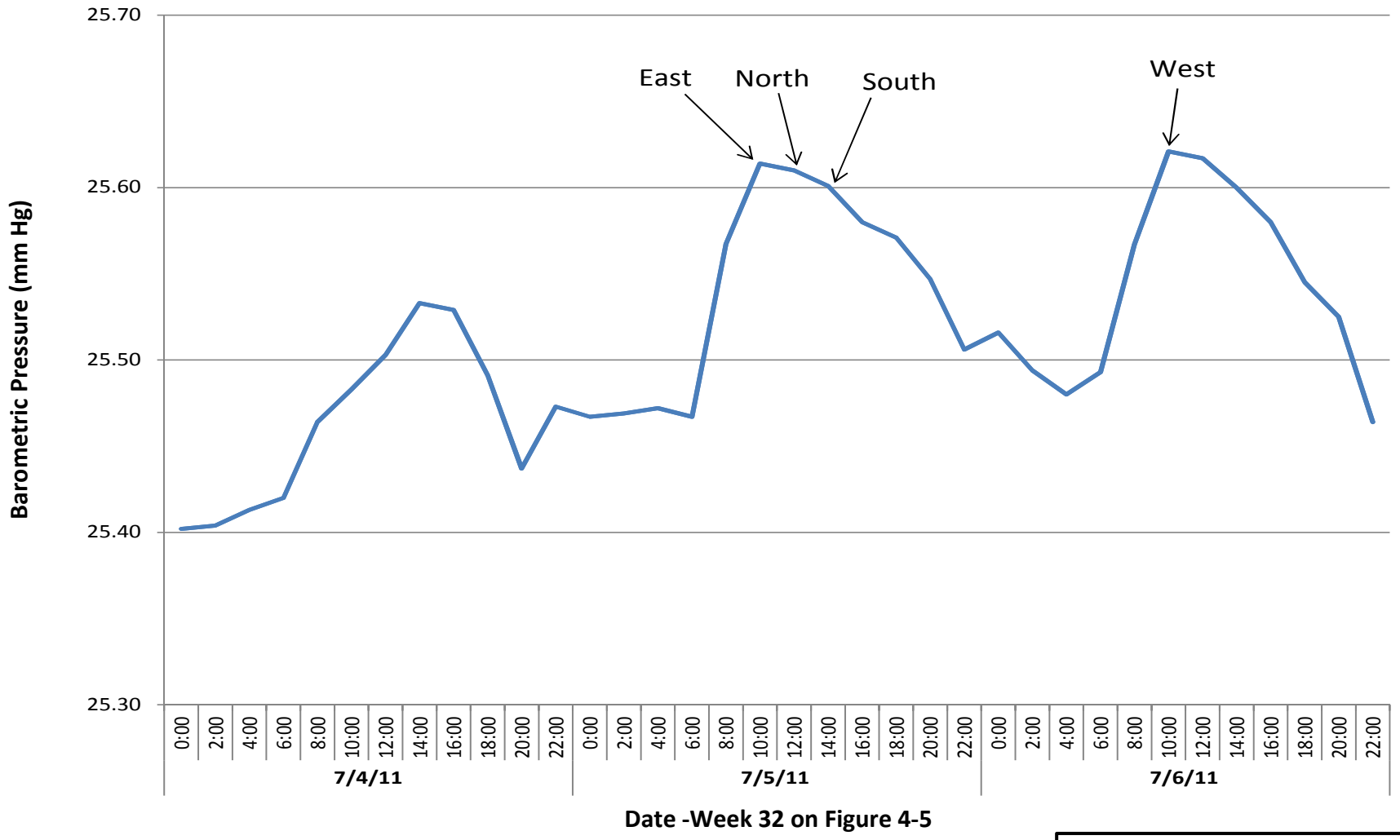
RCRA POND PHOSPHINE ASSESSMENT REPORT

FIGURE 4-6a

BAROMETRIC PRESSURE DURING POND 16S JUNE 2011 PERIMETER PIPE SAMPLING

FILE *Fig 4-6b July Pond 16S Perimeter vs BP.ai 30Jan2012*



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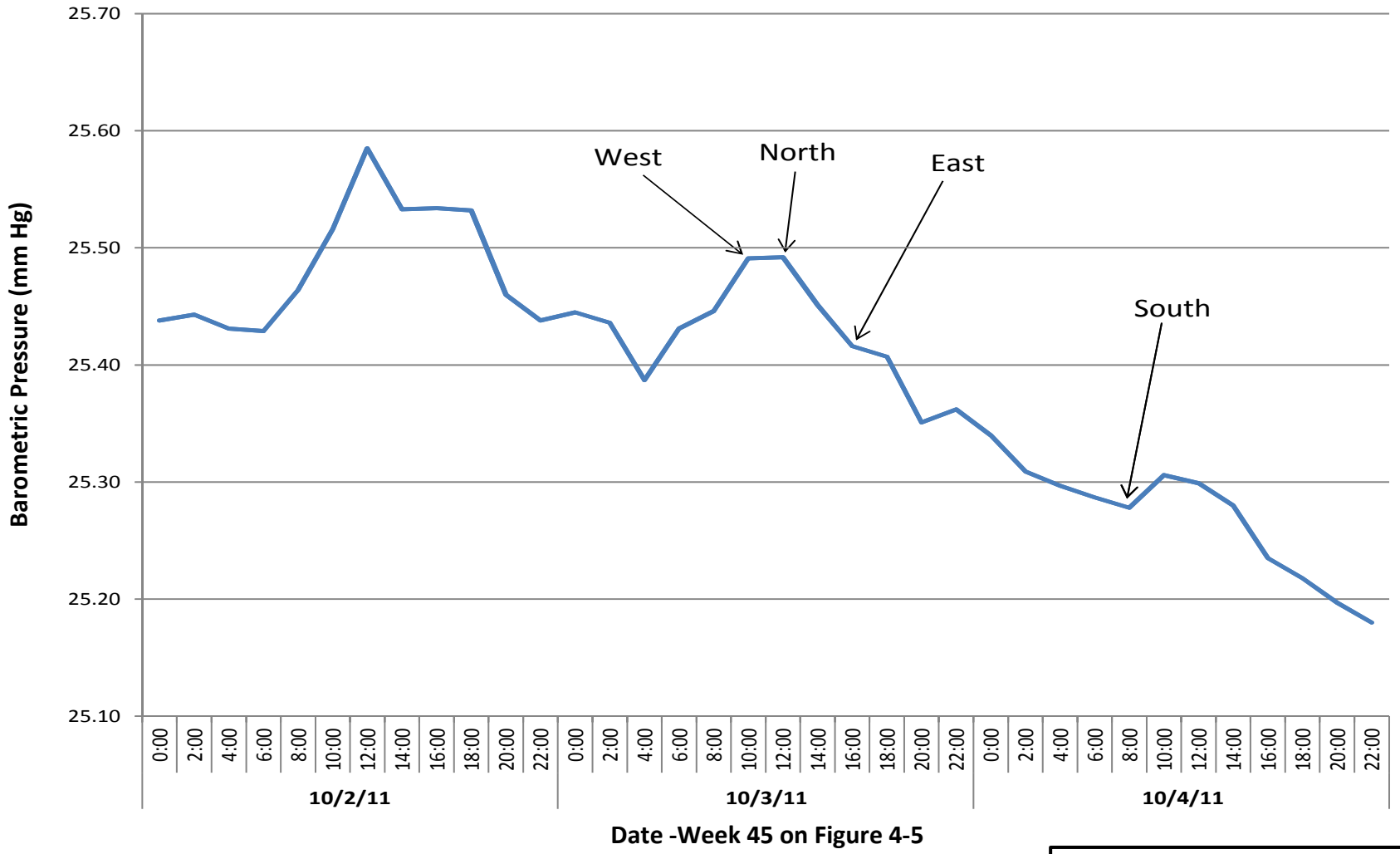
RCRA POND PHOSPHINE ASSESSMENT REPORT

FIGURE 4-6b

BAROMETRIC PRESSURE DURING POND 16S JULY 2011 PERIMETER PIPE SAMPLING

FILE *Fig 4-6c Oct Pond 16S Perimeter vs BP.ai 30Jan2012*



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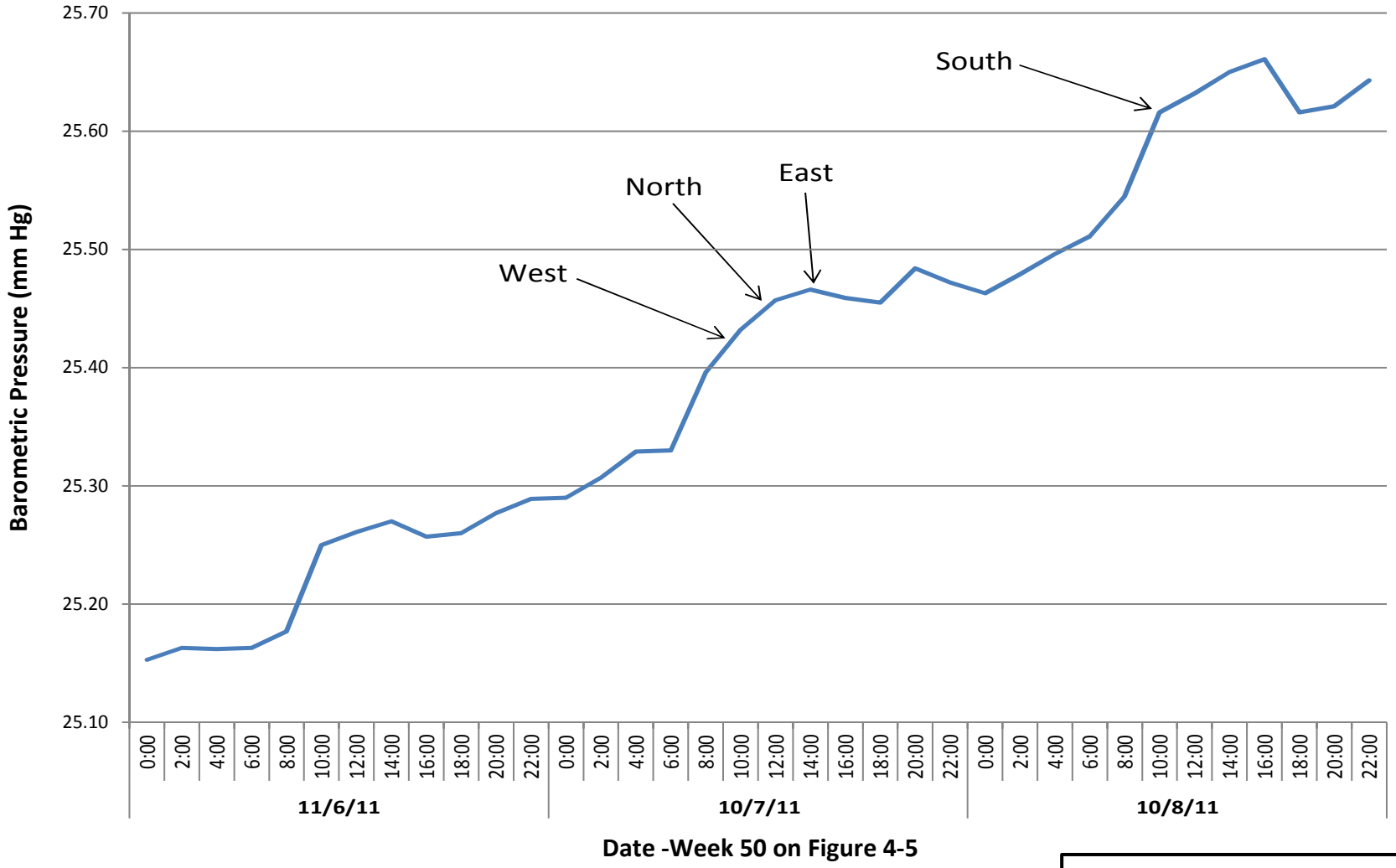
RCRA POND PHOSPHINE ASSESSMENT REPORT

FIGURE 4-6c

BAROMETRIC PRESSURE DURING POND 16S OCTOBER 2011 PERIMETER PIPE SAMPLING

FILE *Fig 4-6d Nov Pond 16S Perimeter vs BP.ai 31Jan2012*



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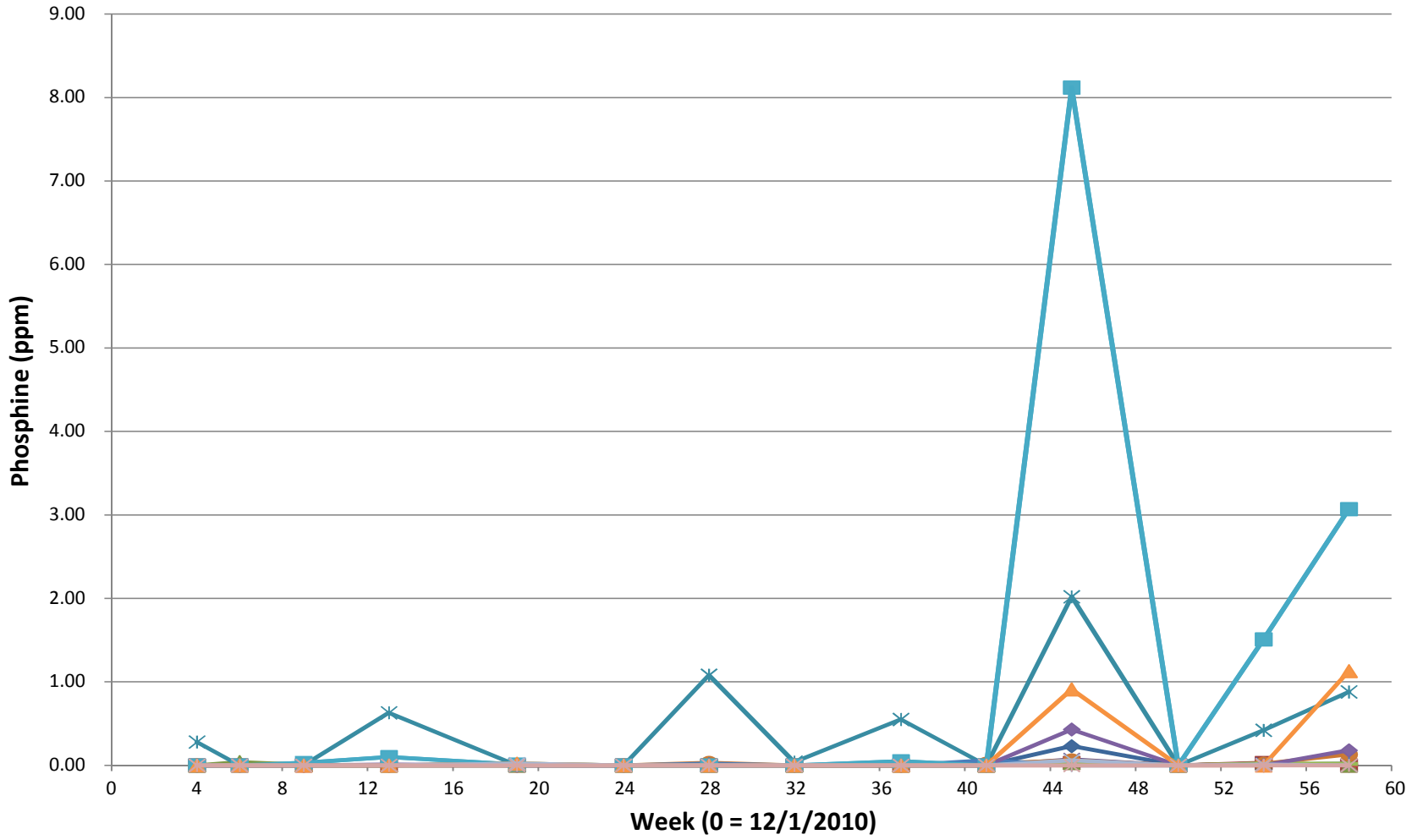
RCRA POND PHOSPHINE ASSESSMENT REPORT

FIGURE 4-6d

BAROMETRIC PRESSURE DURING POND 16S NOVEMBER 2011 PERIMETER PIPE SAMPLING

FILE *Fig 4-7 16S Soil Gas Trend.ai* *31Jan2012*



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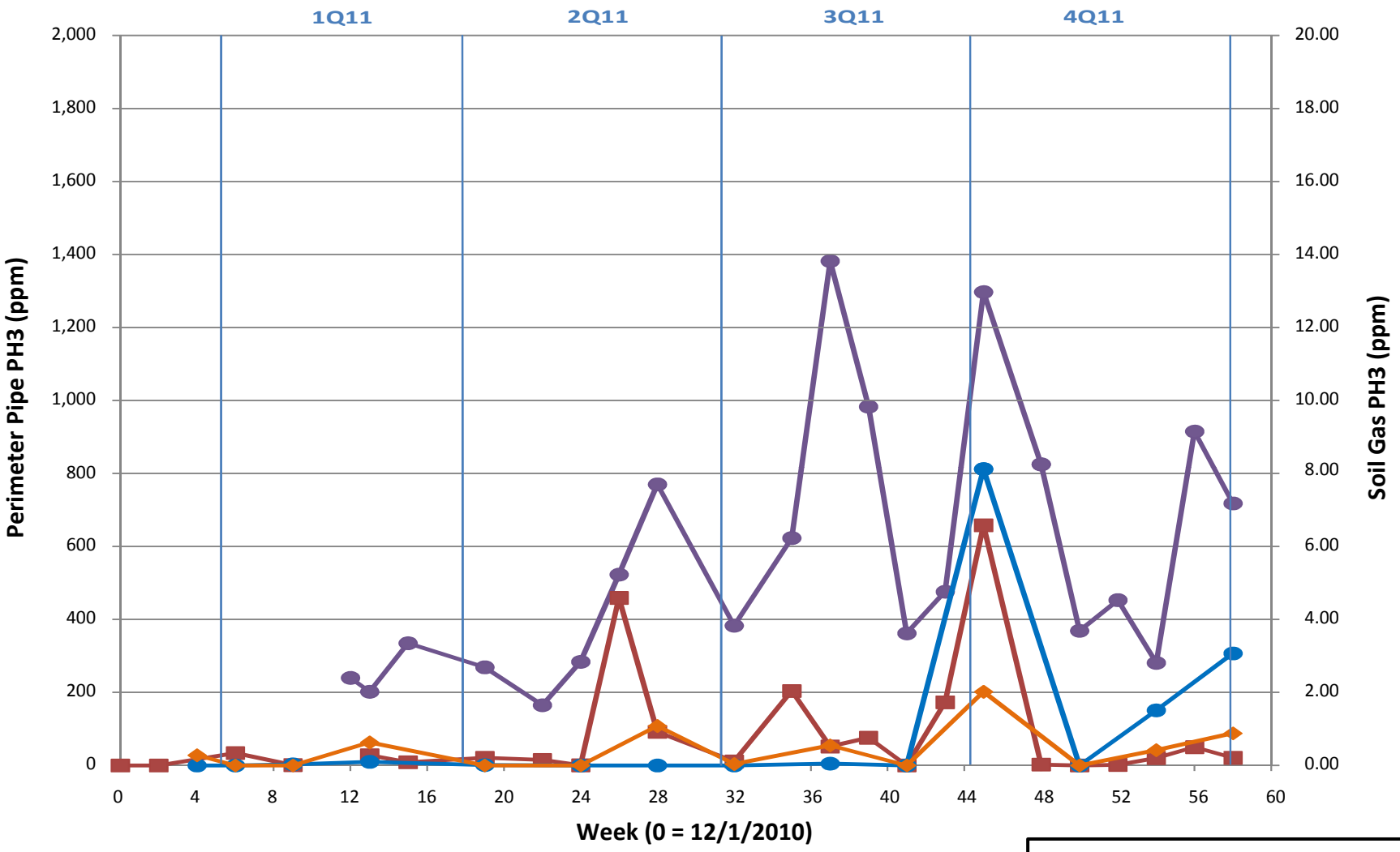
RCRA POND PHOSPHINE ASSESSMENT REPORT

FIGURE 4-7

POND 16S SOIL GAS PROBE
PHOSPHINE CONCENTRATIONS

FILE *Fig 4-8 16S N-S Perim v Soil Gas 5_11.ai* *31Jan2012*



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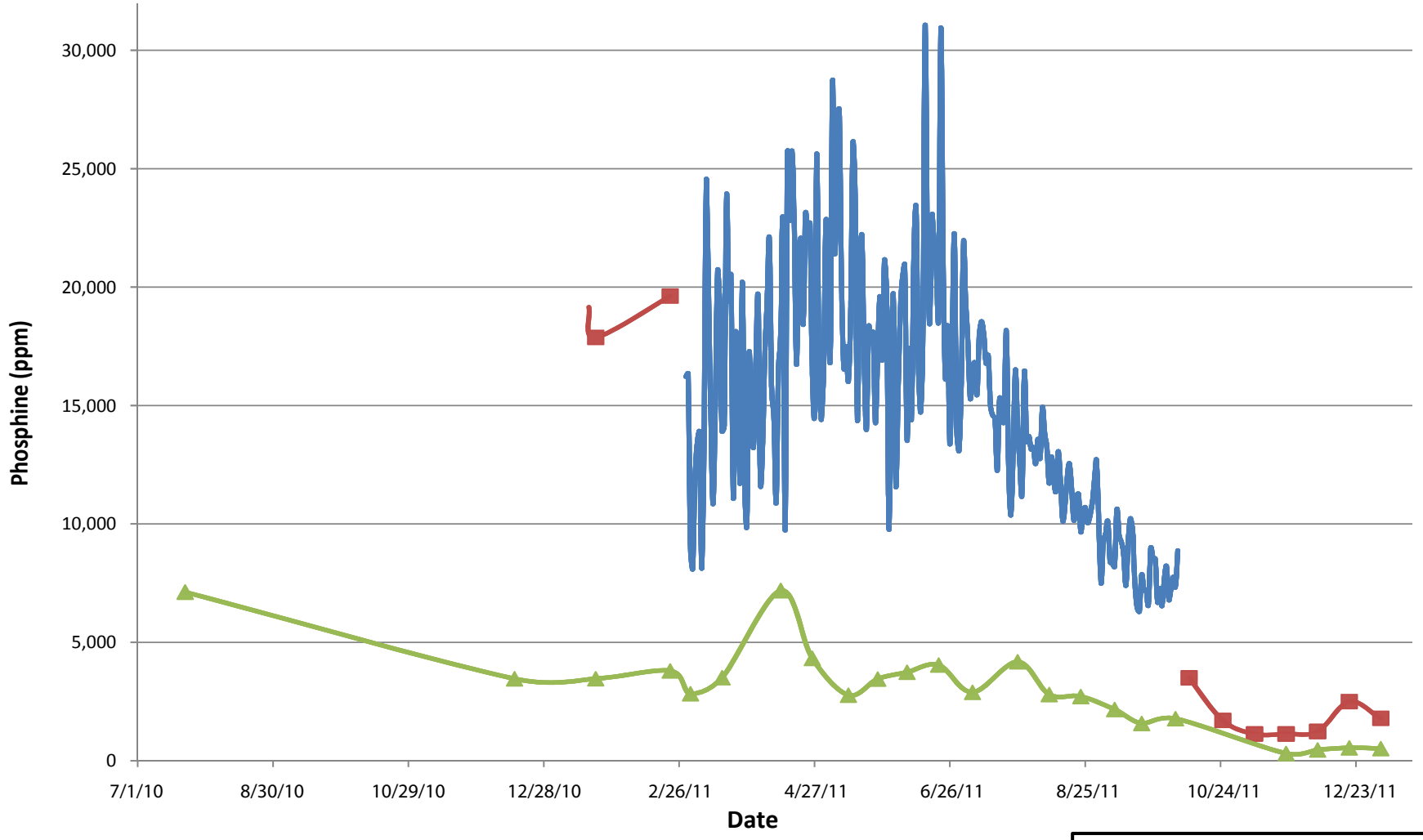
RCRA POND PHOSPHINE ASSESSMENT REPORT

FIGURE 4-8

POND 16S N AND S PERIMETER PIPE AND SOIL GAS 5 AND 11

FILE *Fig 4-9 Pond 18A GES and Perimeter Pipe Data.ai 31Jan2012*



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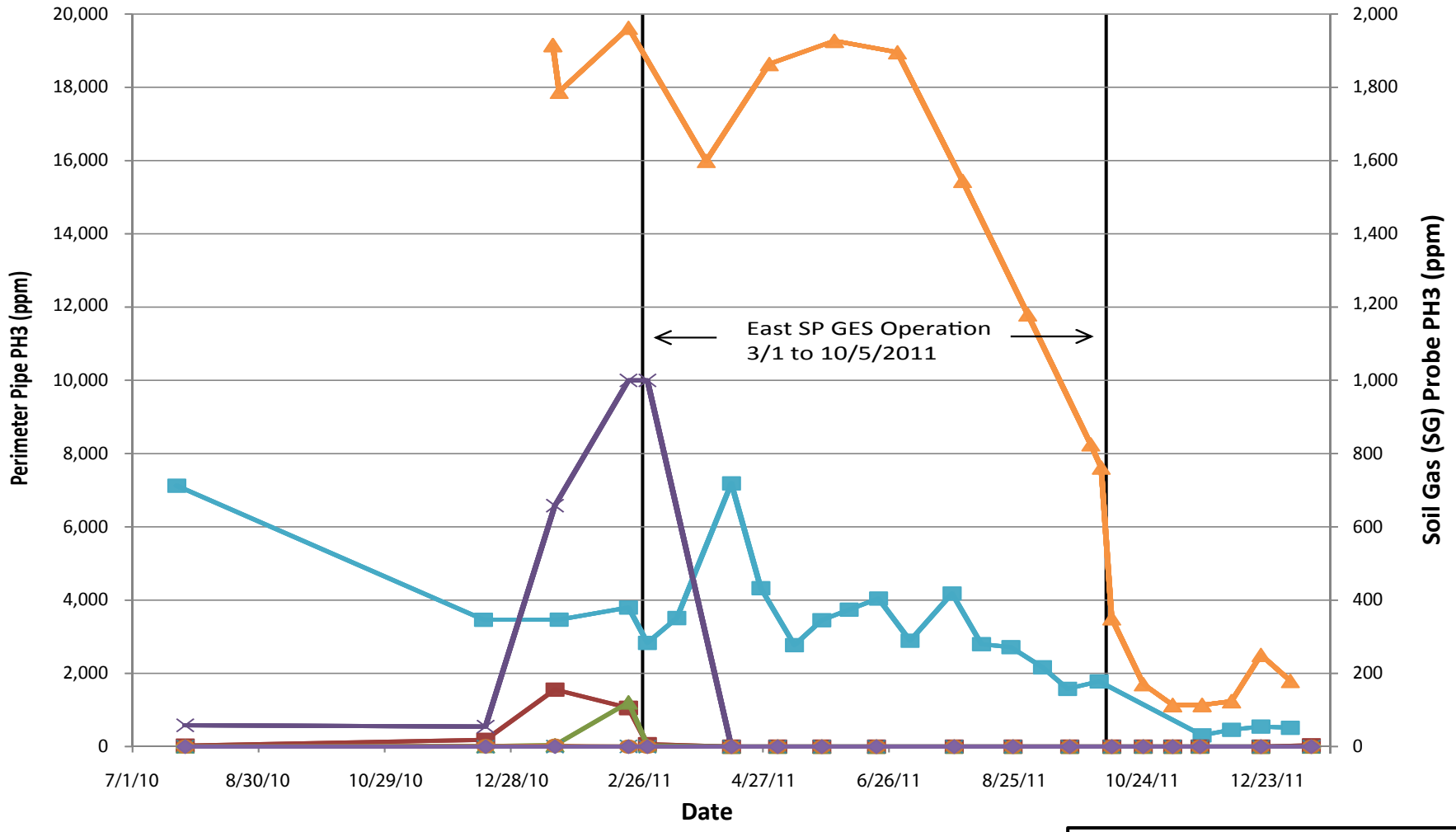
RCRA POND PHOSPHINE ASSESSMENT REPORT

FIGURE 4-9

POND 18A PERIMETER PIPE P3 CONCENTRATIONS

East Standpipe (SP) GES Operation
3/1 to 10/5/11 and East and South SP
Monitoring Results July 2010 to Jan 3 2012

FILE *Fig 4-10 Pond 18A Perimeter Pipe V SG.ai* *31Jan2012*



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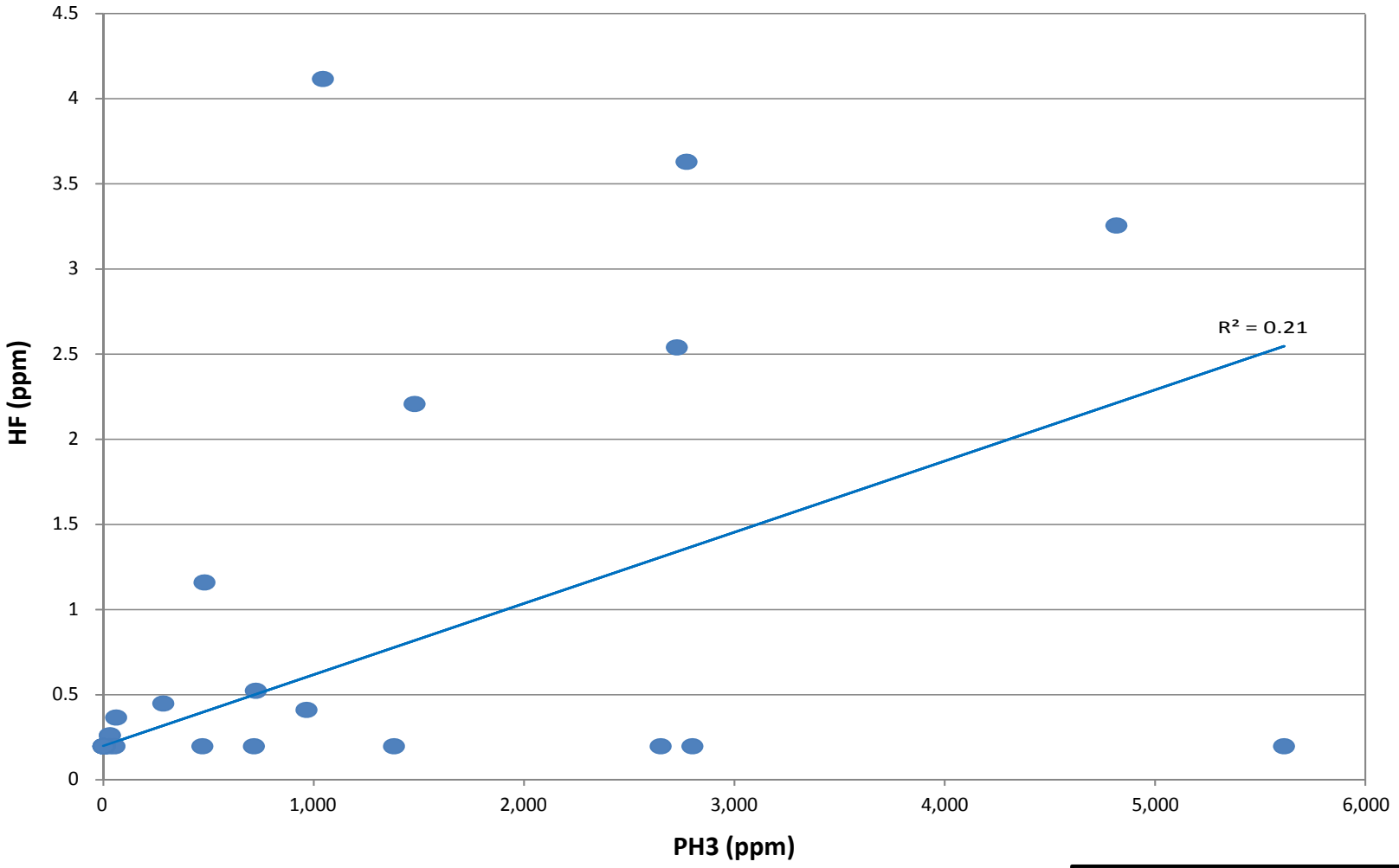
RCRA POND PHOSPHINE ASSESSMENT REPORT

FIGURE 4-10

POND 18A PERIMETER PIPE AND SOIL GAS PH3 MONITORING RESULTS

East Standpipe (SP) Monthly GES Average March 31 to Oct 5, 2011

FILE *Fig 4-11 Perim Pipe HF v PH3 correlation.ai 31Jan2012*



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RCRA POND PHOSPHINE ASSESSMENT REPORT

FIGURE 4-11

POND PERIMETER PIPE 2Q AND 3Q 2011 HYDROGEN FLUORIDE AND PH3 RESULTS

5.0 INTERIM FINDINGS AND RECOMMENDATIONS

5.1 INTERIM FINDINGS

The phosphine monitoring performed over the approximately 14-month study period pursuant to the *Air Monitoring Plan*, *Assessment Study Work Plan* and, to a lesser extent, the Interim Work Plans for Gas Extraction and Treatment yielded extensive, systematically-collected phosphine monitoring data sets for the RCRA Ponds. The *Assessment Study Work Plan* objectives were to collect "*the data and information needed to: 1) demonstrate where and how frequently monitoring should be conducted at each of the RCRA ponds to protect human health and the environment, and 2) to determine the phosphine concentrations which if met or exceeded would trigger additional monitoring and/or phosphine gas extraction and treatment to protect human health and the environment.*" Overall, the monitoring results and evaluation indicate that the study met the first objective and. importantly, established that the appropriate PH3 monitoring locations and frequency are not the same for all of the ponds and depend on the status and results to date from each pond. The interim findings for similar and/or individual ponds are discussed below.

The Assessment Study met the first objective with respect to Ponds 8S, 8E, 9E and the Phase IV ponds. The monitoring locations and frequency at these ponds was adequate to evaluate the potential for phosphine release from these ponds. The monitoring results from Ponds 8S, 8E, 9E and the Phase IV ponds indicate a very low potential for PH3 release to ambient air at concentrations that could represent a potential threat to human health and the environment. Further, there is no indication that additional monitoring or phosphine gas extraction should or will be triggered. The data from these ponds provide lines of evidence that the trigger for phosphine gas extraction is higher than 1,700 ppm PH3 in perimeter pipe. However, because the PH3 concentrations at these ponds were below a "trigger" level, the data do not allow an evaluation that fully meets the second study objective.

The Assessment Study also met the first objective with respect to Pond 16S. As described in Section 4.2, in hindsight the frequency of perimeter pipe monitoring could have been left at a monthly frequency as originally proposed by FMC. The monitoring locations and frequency at Pond 16S were adequate to evaluate the potential for phosphine release during the study period. The monitoring results from Pond 16S indicate a very low potential for PH3 release to ambient air at concentrations that could represent a potential threat to human health and the environment at the PH3 concentrations recorded through January 4, 2012. As such, the Pond 16S data cannot fully meet the second objective. However, as expected and confirmed by data evaluation, PH3 concentrations beneath the cap (i.e., TMPs and perimeter pipe) are increasing, and continuation of the current monitoring program likely will yield additional data that will meet the second study objective with respect to Pond 16S.

The Assessment Study also met the first objective with respect to Ponds 17 and 18A, recognizing that operation of GES units at these ponds included additional monitoring requirements associated with GES operation. As described in Section 4.3, operation of GES units connected to perimeter piping at Ponds 17 and 18A during the assessment study period limits the utility of the monitoring data toward meeting the second objective. As a line of evidence toward establishing a trigger for gas extraction at these ponds, there was a shallow soil gas probe result greater than 600 ppm at Pond 17 and 18A in the month or two consecutive months prior to initiation of gas extraction and treatment. Upon commencement of GES operation, the average GES source gas concentration (from the perimeter pipe standpipe with the highest concentration) at these ponds was about 19,000 ppm PH3. However, note that surface scan and appurtenance ambient air (air release) monitoring at the levels at Pond 17 and 18A prior to and upon initiation of GES operation did not detect any releases to ambient air at concentrations that could represent a potential threat to human health and the environment. Phosphine was not detected during any of the appurtenance leak detection monitoring at Pond 17. Although PH3 was detected at the base of Pond 18A TMP 3 at 11.5 ppm on February 23, 2011, maintenance action to re-compact soil around the base of TMP 3 was effective. PH3 was not detected during follow-up appurtenance monitoring at TMP 3 on February 24, 2011. Apart from the February 23, 2011 detection at TMP 3, phosphine has never been detected in the appurtenance leak detection monitoring program at Pond 18A.

The monitoring results from Pond 15S will continue to be used primarily to evaluate the effectiveness of the current gas extraction and treatment configuration. As such, no findings regarding Pond 15S are presented in this report.

5.2 RECOMMENDATIONS

As described in the Interim Findings above, additional monitoring data will be needed to meet the second study objective and develop additional monitoring and/or gas extraction triggers for the RCRA ponds. Monitoring pursuant to the RCRA Pond UAO *Air Monitoring Plan* and *Pond 15S Interim Work Plan Gas Extraction and Treatment* and *15S Interim Work Plan Addendum A* will continue until those plans are modified, superseded or terminated as approved by EPA. The *Air Monitoring Plan* and Interim Plan monitoring results will continue to be reported and reviewed monthly as required by the RCRA Pond UAO.

Several modifications to the monitoring frequency and locations are recommended for an extension of the monitoring pursuant to the *Phosphine Assessment Study Work Plan* and the *Pond 18A Monitoring and Alternative Gas Extraction Plan* developed under the *Phosphine Assessment Study Work Plan*. In addition to monthly reporting and review of the results from the extension of the Assessment Study monitoring, FMC will conduct quarterly updates of the evaluations for Ponds 16S and 18A with respect to meeting the second study objective. The updates will be documented in technical memoranda that will include updated tabulated data,

graphical evaluations and, potentially, recommendation(s) for further modification of the monitoring program and/or recommendation(s) for commencing gas extraction and treatment at Pond 16S and/or 18A.

The monitoring programs under the *Air Monitoring Plan* and Pond 15S Interim Plan, and recommended modifications for an extension of the Assessment Study into 2012 are summarized below. Table 5.1 summarizes the RCRA pond PH3 monitoring programs moving into 2012 on a pond-by-pond basis.

The PH3 monitoring program for Ponds 8S, 8E, 9E and the Phase IV ponds should continue following the procedures and schedule in the *Air Monitoring Plan*. The PH3 monitoring program for Pond 16S should continue following the procedures and schedule in the *Air Monitoring Plan* and an extension of the *Assessment Study Work Plan* monitoring; however, the perimeter pipe monitoring frequency should be reduced to monthly and only at the north standpipe which has consistently been found to have the highest PH3 concentrations of the four standpipes.

Given the very low residual perimeter pipe and TMP concentrations at Pond 17 at the completion of GES operation, the PH3 monitoring program for Pond17 should continue following the procedures and schedule in the *Air Monitoring Plan*.

The PH3 monitoring program for Pond 18A should continue following the procedures and schedule in the *Air Monitoring Plan* and an extension of the *Pond 18A Monitoring and Alternative Gas Extraction Plan* developed under the *Assessment Study Work Plan*; however, the perimeter pipe monitoring frequency should be reduced to monthly and only at the east standpipe which has consistently been found to have the highest PH3 concentrations of the two standpipes.

The Pond 15S monitoring program will continue pursuant to the *Air Monitoring Plan*, *Pond 15S Interim Work Plan Gas Extraction and Treatment*, *RCRA Pond 15S Preliminary Final Design Analysis Report* and as recently modified by the *15S Interim Work Plan Addendum A*. Any needed modification to the Pond 15S monitoring per these plans will be discussed with and approved by EPA prior to implementing those modifications.

Table 5.1 RCRA Pond Phosphine Monitoring Programs into 2012[1]

Pond	Air Monitoring Plan[2]		Soil Gas	Perimeter pipe	TMP
	Surface Scan	Appurtenance			
8S	Annual (3Q 12)[3]	Annual (3Q 12)	None	None	None
9E	Annual (3Q 12)	Annual (3Q 12)	None	None	None
Phase IV	Annual (3Q 12)	Annual (3Q 12)	None	None	None
8E	QTR (4Q 11)[4]	QTR (4Q 11)	None	None	None
17	QTR (4Q 11)	QTR (4Q 11)	None	None	None
18A	QTR (4Q 11)	QTR (4Q 11)	Monthly	Monthly (E only)	None
16S	Annual (3Q 12)	Annual (3Q 12)	Monthly	Monthly (N only)	Monthly
15S	QTR (4Q 11) plus Addendum A[5]	QTR (4Q 11) plus Addendum A[5]	Monthly plus Addendum A[5]	East - GES ops	TMP #2 GES ops - others monthly

Notes:

[1]Shaded cells indicate recommended monitoring pursuant to extension of the Phosphine Assessment Monitoring program into 2012. FMC will conduct quarterly updated evaluations for Ponds 16S and 18A that will potentially include recommendation(s) for further modification of the monitoring program and/or commencing gas extraction and treatment at these ponds.

[2] RCRA Pond UAO – SOW Task 1 – Air Monitoring Plan – Part I and Part II, January 2011.

[3] Quarter and year indicates next scheduled round of monitoring based on the annual frequency.

[4] QTR means quarterly frequency and quarter and year monitoring began at quarterly frequency.

[5] Pond 15S Interim Work Plan Addendum A, December 2011.

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APPENDIX A

Evaluation of Logged Non-Zero Maximum Readings using Draeger Pac III Phosphine Monitors at Pond 18A Continuous Monitoring Station 3
July 8, 2011

Evaluation of Logged Non-Zero Maximum Readings using Draeger Pac III Phosphine Monitors at Pond 18A Continuous Monitoring Station 3

July 8, 2011

As FMC has reported in the weekly UAO reports beginning on October 6, 2010 (weekly report #9), the Draeger PAC III monitors occasionally experience non-zero maximum readings during the 8-hour continuous monitoring periods that are not detections of phosphine (PH3). These recorded 'maximum' readings, according to Draeger, represent the maximum one-second reading registered by the meter since the monitor was last turned on. Pursuant to EPA's request during the June 15, 2011 conference call, FMC initiated a more detailed evaluation of Draeger monitor data from the Pond 18A continuous monitoring station 18A-3.

FMC has over a decade of on-site experience and consulted extensively with Draeger technical representatives regarding the capabilities and limitations of the Draeger Pac III monitors equipped with the XS Hydride sensor for PH3 detection. Based on experience and Draeger's technical specifications, the monitors are well suited for field use but are also very sensitive to cross-interferences and low-voltage electronic effects. In order to evaluate these potential effects, particularly at the "near-zero" or below levels of interest readings (i.e., readings far below the OSHA 0.3 ppm 8-hour TWA or 1.0 ppm 15-minute STEL), FMC performed an evaluation using co-located Draeger Pac III monitors at continuous monitoring station 18A-3.

During the evaluation, the Draeger monitor deployed at station 18A-3 remained set to record 1 minute average PH3 readings, the same configuration setting used at all of the continuous monitoring stations. A second Draeger monitor was co-located at station 18A-3 and set to record 10 second average readings. The two monitors were set a few inches apart to minimize potential inductive electronic cross interference. As described in the Air Monitoring Plan, the primary monitor (logging 1 minute averages) was queried at 8-hour intervals for the time-weighted average (TWA), maximum reading and current reading and the values recorded on the operators log sheet. For this evaluation, if the maximum reading displayed on the monitor when the monitored was queried was greater than 0.00 on the primary monitor, the primary and co-located monitors were downloaded for the 8 hour period associated with the logged above 0.00 maximum reading, i.e., the prior 8 hours.

The evaluation began on June 17 at the 1300 hour reading and concluded on July 1, 2011 at the 0500 hour reading. During the forty-two 8-hour periods during the 14 day evaluation, the primary monitor logged thirteen (13) non-zero maximums. Note that during this evaluation period all TWA readings at station 18A-3 (and stations 18A-1 and

18A-2) were 0.00 ppm PH3. Eleven (11) of the recorded maximums were 0.05 or lower and the other two (2) were 0.17. A table summarizing the thirteen “events” when a non-zero maximum was recorded on the primary monitor is attached. In addition, graphs of the downloaded 1-minute and 10-second average data for the 8-hour periods when the primary monitor recorded a non-zero maximum are attached.

As summarized in the table, FMC reviewed the downloaded data in conjunction with meteorological conditions and operational conditions. KASE / Warbonnet Inc. (KW) personnel also contacted Draeger technical representatives to obtain additional information on the potential cause(s) of spurious maximum readings and low-level positive / negative sensor zero drift. Overall, this evaluation provided additional confirmation that the occasional above-zero maximums recorded on the Draeger monitors most likely result from factors other than detection of PH3 in ambient air at the monitoring stations. The downloaded data also shows that the recorded maximums, other than low-level zero drift, are extremely short in duration as evidenced by the logged 1-minute and 10-second averages over a similarly short period of a few minutes or less and that are lower the recorded maximum. The likely causes of these primarily very short duration non-zero data, as well as the actions to minimize recurrence are summarized below:

- Events 1, 2 and 4 occurred at 0500 hours and the logged non-zero maximums correspond to the time the operator drove to the monitor to query the monitor for the scheduled 8-hour reading. Station 18A-3 is especially prone to potential lingering vehicle exhaust because it is located in a low area and operator’s vehicles regularly pass through this area to perform monitoring at ponds 18A, 17 and 15S. In addition, the calmest meteorological conditions of the day are typically early in the morning (e.g., 0500 hours) which would result in vehicle exhaust not dispersing as quickly. FMC and KW personnel have been fully aware that the presence of vehicle exhaust can result in false positives readings on the Draeger monitors and thus has instructed operators to park at least 20 feet away, downwind of the continuous monitors and to turn off the vehicle engine after parking. Following event #4, KWI reinforced the work rules "**do not park the truck within 20 feet of a continuous monitor**" and "**turn off your vehicle when checking a continuous monitor**" for the operators and no other likely vehicle exhaust events were recorded during this evaluation. In addition to possible vehicle exhaust impacts noted above, during Event 4, which had a recorded maximum of 0.17, the operator reported that he dropped the primary monitor on the ground prior to querying the monitor for the 0500 hour readings. The monitor impact with the ground could have caused a voltage spike that resulted in the spurious maximum reading.

- Event 8, a recorded maximum of 0.17, also occurred at 0500 hours, but further review does not implicate vehicle exhaust, but supports the non-zero maximum was a result of the monitor failing to clear its internal memory when restarted (turned off then turned back on). The 1-minute and 10-second maximums were zero throughout the 8 hour period except the last 1-minute average (0.01) at the time the monitor was checked (and while this 0.01 may be attributed to vehicle exhaust, the logged data do not support the recorded maximum value). Following the operator's prior reading of this monitor at 2100 hours on June 24, the operator experienced trouble resetting the meter to begin the next 8 hour monitoring period. On the operator's first restart, the "maximum" reading was 0.16 (rather than the meter clearing to 0.00). On the operator's second restart, the "maximum" reading went to 0.17. After the readings at 2100 hours on June 24 and still showing a 0.17 maximum reading following the second restart, the operator returned the meter to service. The same maximum reading was recorded and reported when the meter was queried at 0500 hours on June 25. This monitor was taken out of service after the 0500 hour reading on June 25. Draeger attributed this problem with the "maximum" setting to noise in the electronics (and do not have a specific diagnosis as to why the monitors do not always reset to 0.00 ppm when turned off and on). During that discussion with Draeger regarding this problem, the Draeger technical representative stated that if turning the monitor "off" and "on" does not reset the "maximum" to 0.00 ppm then the only other option is to go into the programming and "clear exposures." KW's instrument specialist has done this in the past, but had not trained the GES operators on this procedure as the procedure to "clear exposures" involves access to the monitor's internal programming where meter data-logging criteria and alarm levels are set. After further discussions with Draeger, a simplified procedure was developed that allows the operators to "clear exposures" while minimizing the potential for the operator to inadvertently reset the data-logging / alarm settings.

- For the other events with logged data between 0.05 and -0.05, the monitors are likely experiencing sensor drift. Based on discussions with Draeger, the monitor can be taken to an area known to be clean air and then perform a fresh air calibration. This calibration is used to re-set the zero and is faster than a full calibration (with calibration gas). KW has been reluctant to train the operators to perform the zero calibration because it requires accessing the meter's configuration mode and the potential for unintentional resetting of other functions (like the full calibration or settings for data logging). KW has trained an additional operator to perform the zero calibration which will help minimize "multiple" non-zero maximums on consecutive 8 hour periods due to sensor drift.

FMC has re-affirmed its prior conclusion that there does not appear to be further value in investigating the infrequent spurious low but non-zero maximums, as these low-level 'maximum' readings demonstrate the sensitivity of the Draeger Pac III meters. Data will be downloaded pursuant to the thresholds described in the Plan Framework for Facility Boundary Monitoring.

Pond 18A Station No.3 Co-Located Monitor Evaluation - Summary of Non-0.00 Maximum Readings

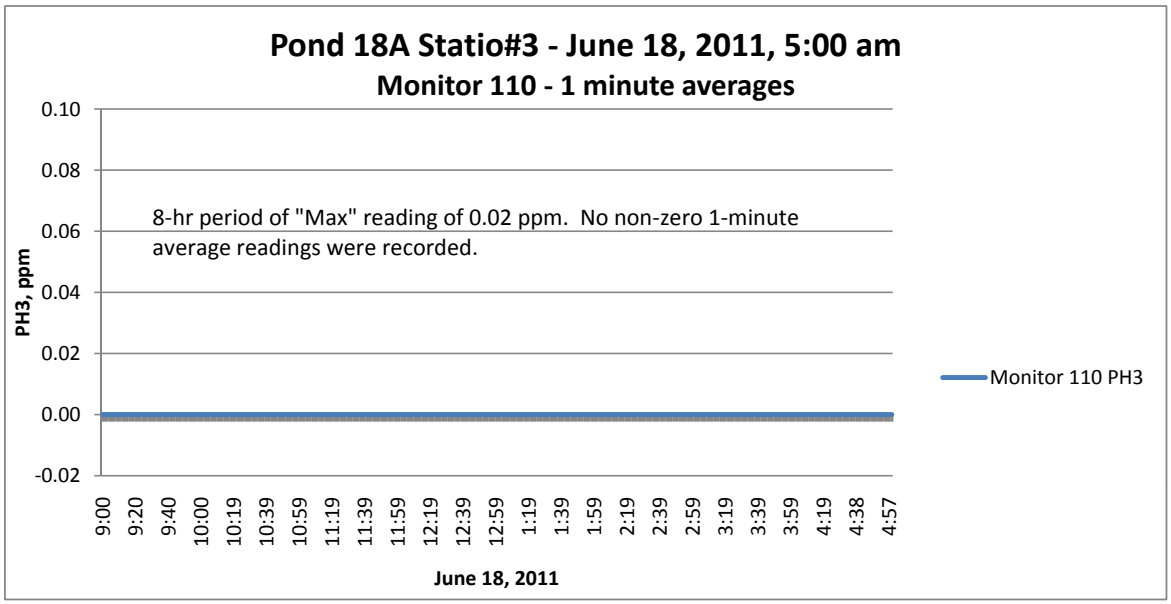
Event No.	Day	Time[1]	Regular Monitor Max	Highest 1-minute Average		Highest 10-second Average		Weather Conditions[3]			Activity in the Area	Comments
			ppm	Time[2]	ppm	Time[2]	ppm	Wind Speed (mph)	Wind Direction	Observations		
1	6/18/11	500	0.02	na	0.00	0459	0.05	8.5	187		Normal operations	Measured at time of readings. Possible vehicle exhaust. Dropped monitor.
2	6/19/11	500	0.03	0501	0.03	na	0.00	6.9	254		Normal operations	Also had a current reading of 0.03 ppm. Possible vehicle exhaust.
3	6/19/11	1300	0.02	na	0.00	na	0.00	8.8	240		Normal operations	
4	6/21/11	500	0.17	0458	0.10	0500	0.08	7.4	203		Normal operations	Measured at time of readings. Possible vehicle exhaust. Dropped monitor.
5	6/22/11	2100	0.03	1842 - 1929	0.03	1849	0.02	10.1	230	Evening T. storms	Normal operations	Thunderstorm at time of readings.
6	6/23/11	500	0.02	na	0.00	na	0.00	3.9	117		Normal operations	
7	6/24/11	2100	0.02	na	0.00	na	0.00	11.4	207		Normal operations	
8	6/25/11	500	0.17	0500	0.01	na	0.00	7.9	189		Normal operations	Problem resetting monitor.
9	6/27/11	500	0.02	na	0.00	na	0.00	2.6	222		Normal operations	
10	6/28/11	500	0.02	na	0.00	na	0.00	3.3	266		Normal operations	
11	6/28/11	1300	0.02	na	0.00	na	0.00	18.4	157		Normal operations	
12	6/29/11	500	0.05	0339 - 0501	0.03	0459	0.04	8.9	188		Normal operations	Both monitors experienced a "zero drift."
13	6/29/11	1300	0.02	0804 & 0831	0.01	na	0.00	7.1	263		Normal operations	

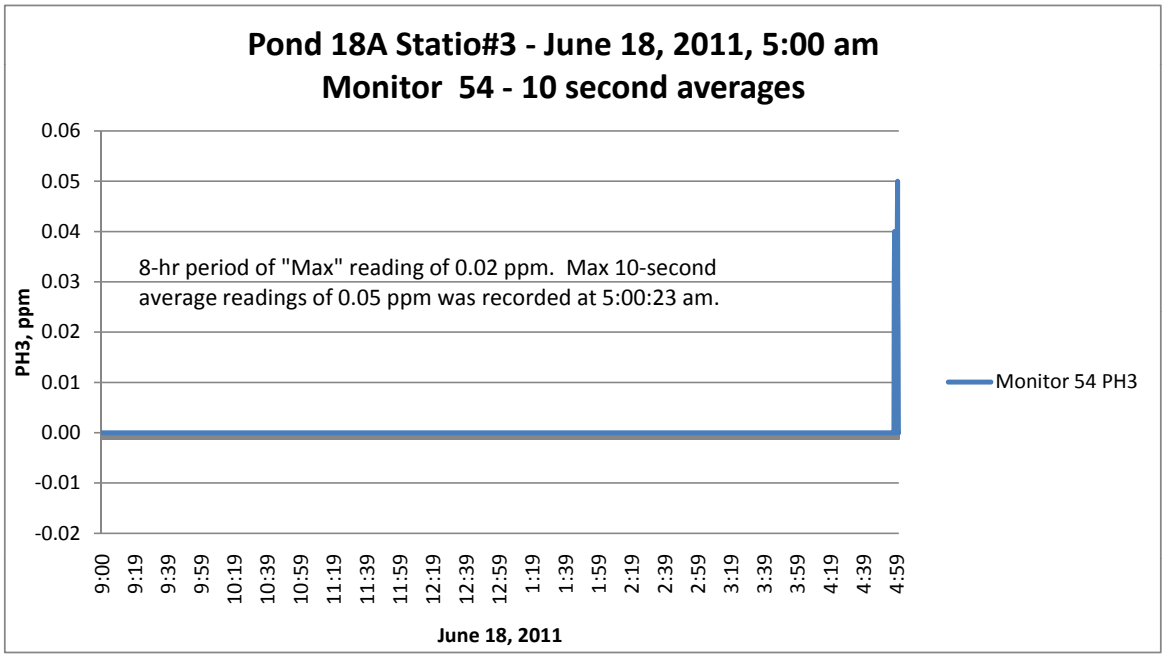
Notes:

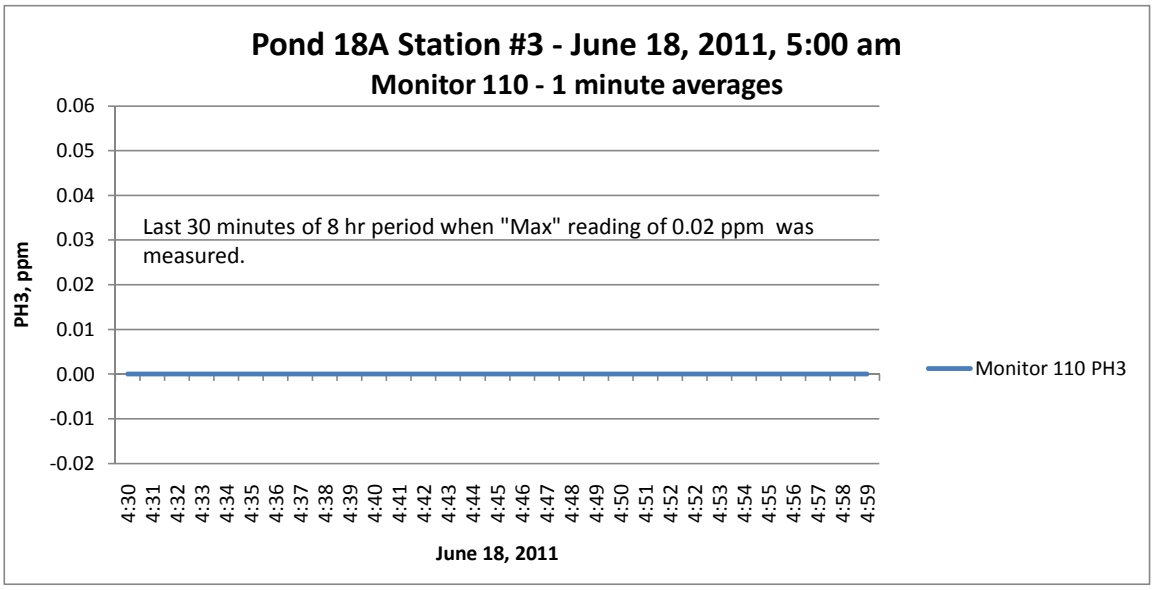
[1] This time of the operator's regular scheduled monitoring when a maximum above 0.00 ppm was recorded for the prior 8 hour period. Times are recorded in military time.

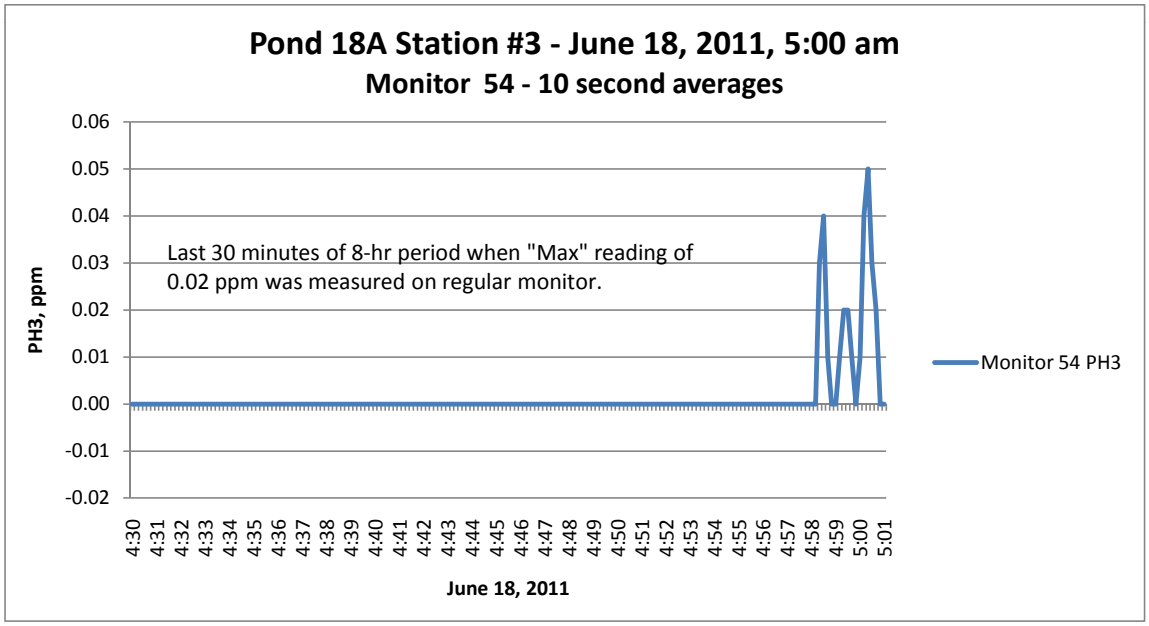
[2] This time is the actual time of the one-minute or 10-second average as recorded / logged by and downloaded from the Draeger PAC III monitors. Times are recorded in military time.

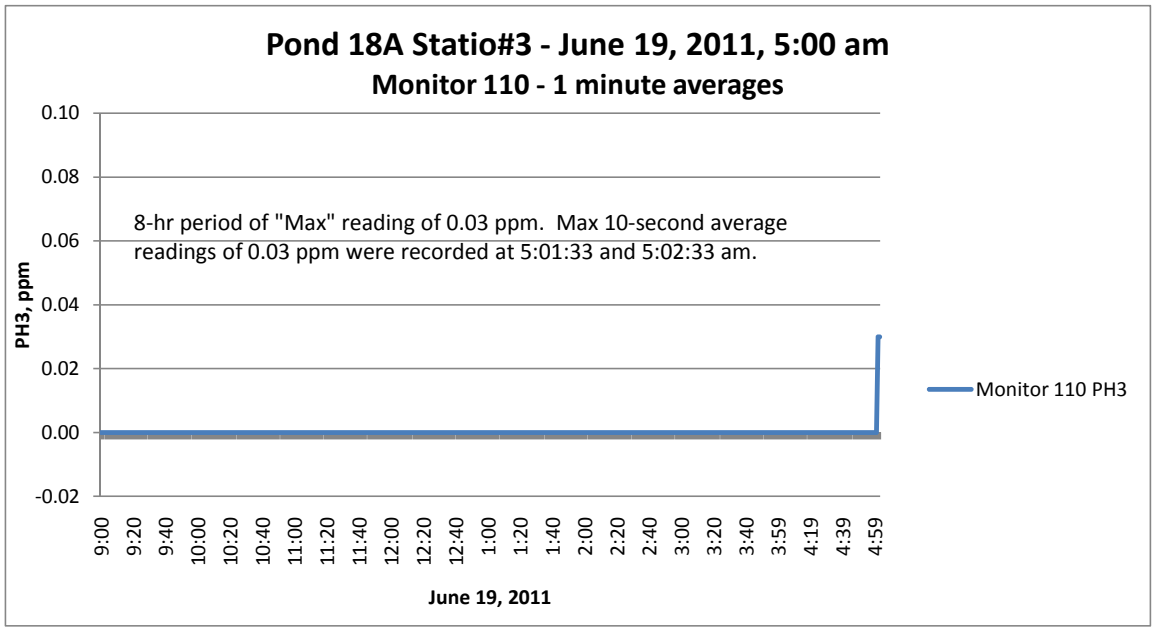
[3] The weather conditions are the conditions noted at the plant site weather station located about 0.5 miles NW of Pond 18A. The readings were taken approximately 60 minutes before the Station #3 8-hour readings were monitored.

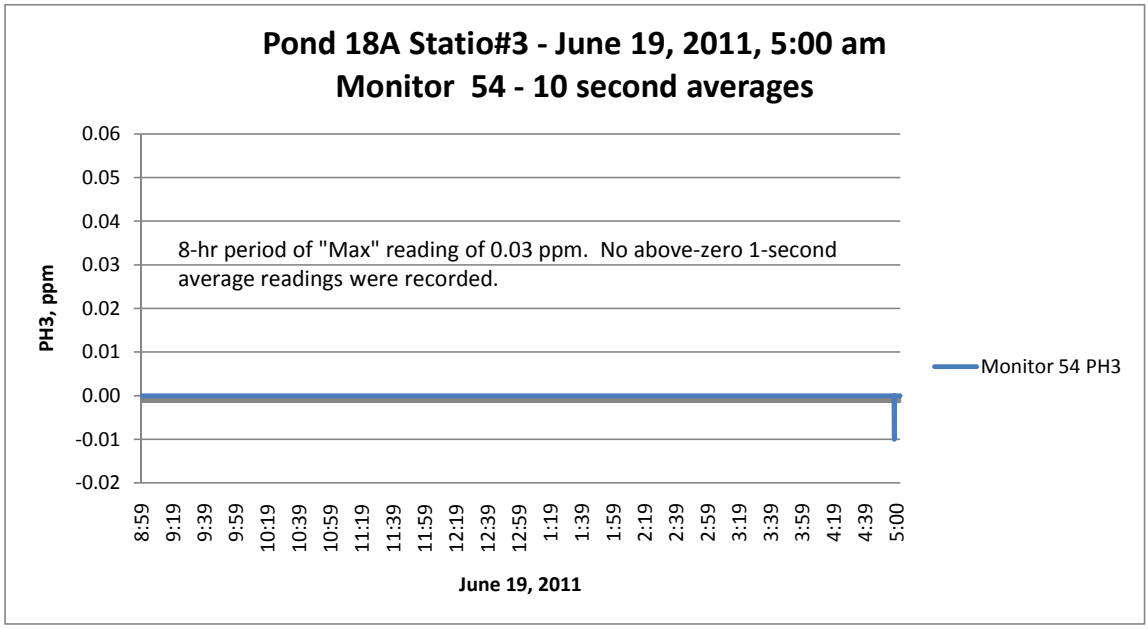

Pond 18A Statio#3 - June 18, 2011, 5:00 am
Monitor 110 - 1 minute averages
8-hr period of "Max" reading of 0.02 ppm. No non-zero 1-minute average readings were recorded.
PH3, ppm
0.10
0.08
0.06
0.04
0.02
0.00
-0.02
9:00
9:20
9:40
10:00
10:19
10:39
10:59
11:19
11:39
11:59
12:19
12:39
12:59
1:19
1:39
1:59
2:19
2:39
2:59
3:19
3:39
3:59
4:19
4:38
4:57
June 18, 2011
Monitor 110 PH3

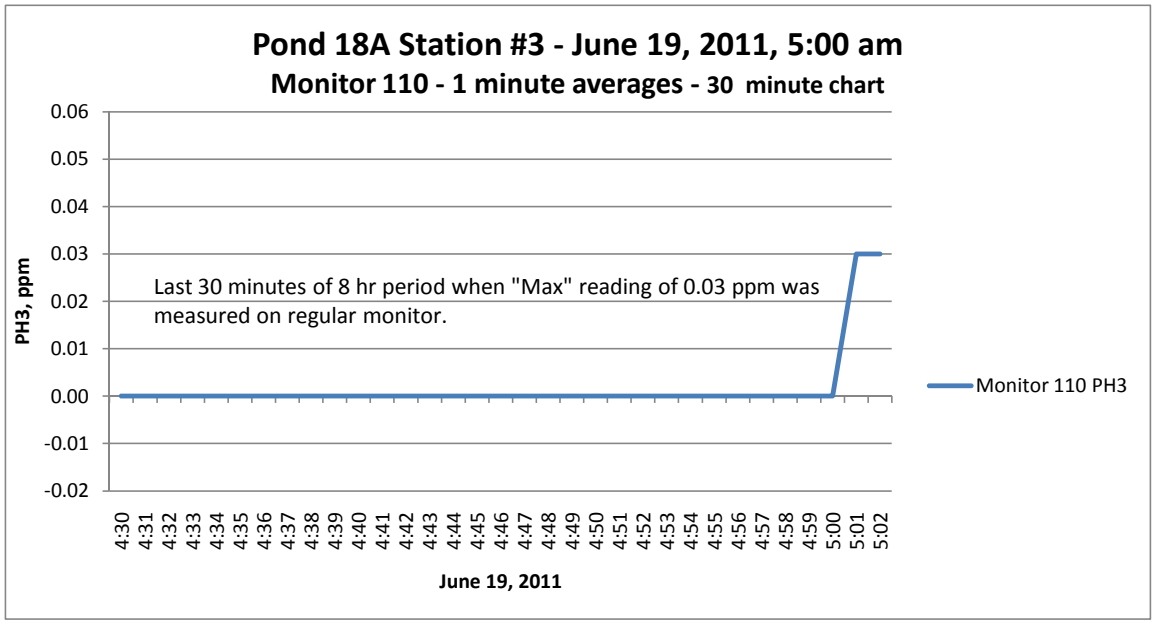

Pond 18A Statio#3 - June 18, 2011, 5:00 am
Monitor 54 - 10 second averages
8-hr period of "Max" reading of 0.02 ppm. Max 10-second average readings of 0.05 ppm was recorded at 5:00:23 am.
PH3, ppm
0.06
0.05
0.04
0.03
0.02
0.01
0.00
-0.01
-0.02
9:00
9:19
9:39
9:59
10:19
10:39
10:59
11:19
11:39
11:59
12:19
12:39
12:59
1:19
1:39
1:59
2:19
2:39
2:59
3:19
3:39
3:59
4:19
4:39
4:59
June 18, 2011
Monitor 54 PH3

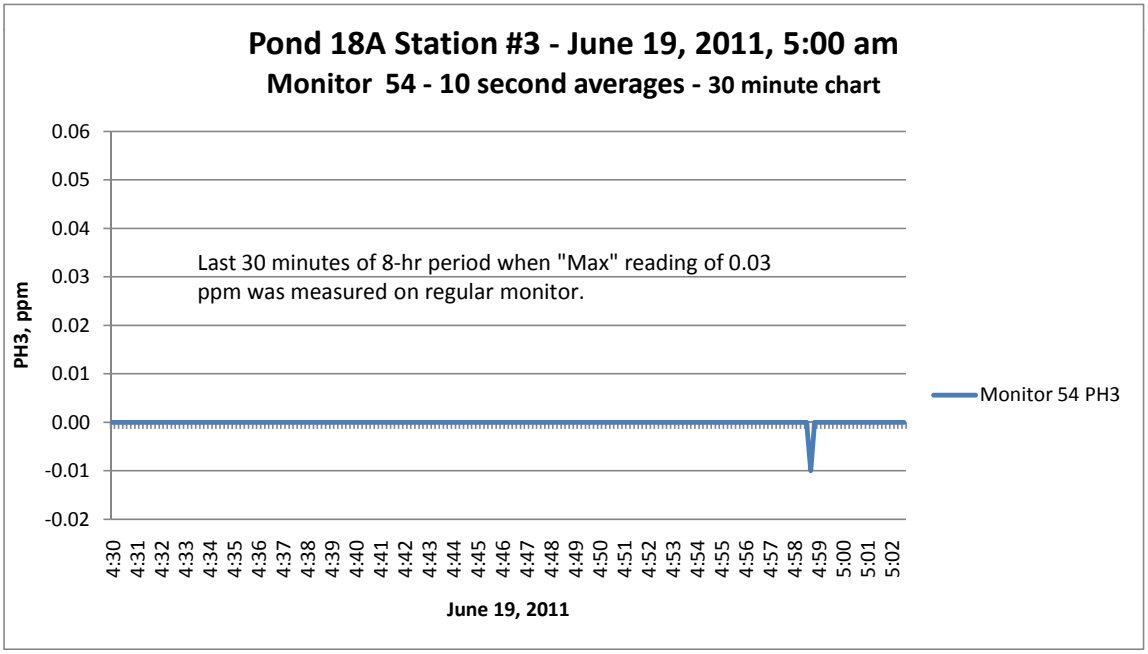

Pond 18A Station #3 - June 18, 2011, 5:00 am
Monitor 110 - 1 minute averages
0.06
0.05
0.04
0.03
0.02
0.01
0.00
-0.01
-0.02
PH3, ppm
Last 30 minutes of 8 hr period when "Max" reading of 0.02 ppm was measured.
4:30 4:31 4:32 4:33 4:34 4:35 4:36 4:37 4:38 4:39 4:40 4:41 4:42 4:43 4:44 4:45 4:46 4:47 4:48 4:49 4:50 4:51 4:52 4:52 4:53 4:54 4:55 4:56 4:57 4:58 4:59
June 18, 2011
Monitor 110 PH3

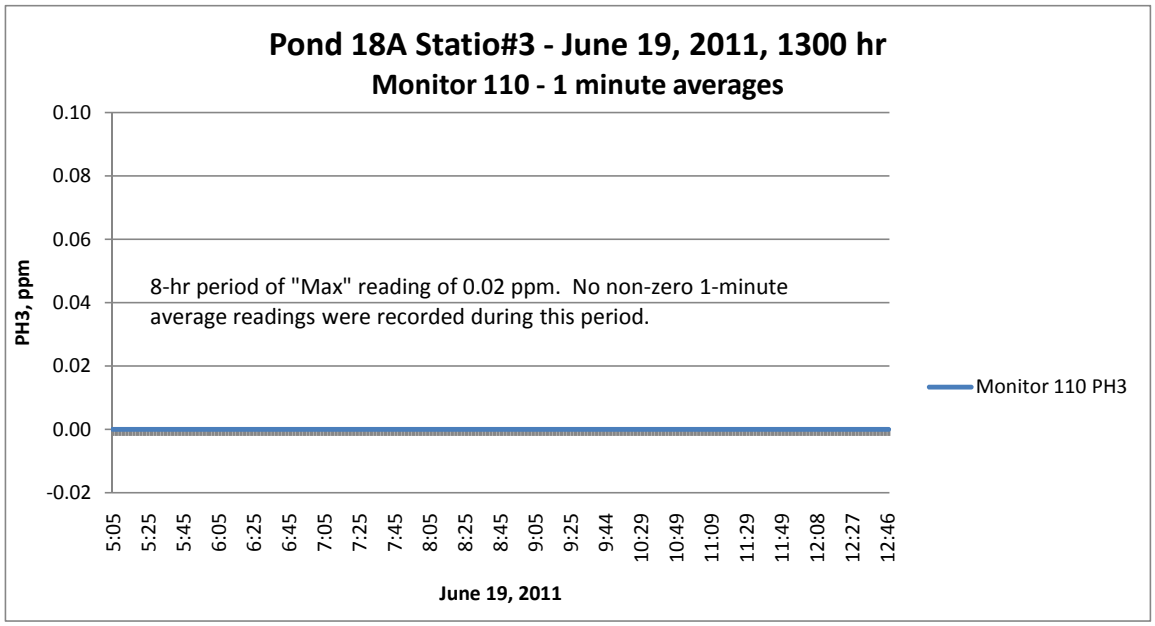

Pond 18A Station #3 - June 18, 2011, 5:00 am
Monitor 54 - 10 second averages
0.06
0.05
0.04
0.03
0.02
0.01
0.00
-0.01
-0.02
PH3, ppm
Last 30 minutes of 8-hr period when "Max" reading of 0.02 ppm was measured on regular monitor.
4:30 4:31 4:32 4:33 4:34 4:35 4:36 4:37 4:38 4:39 4:40 4:41 4:42 4:43 4:44 4:45 4:46 4:47 4:48 4:49 4:50 4:51 4:52 4:53 4:54 4:55 4:56 4:57 4:58 4:59 5:00 5:01
June 18, 2011
Monitor 54 PH3

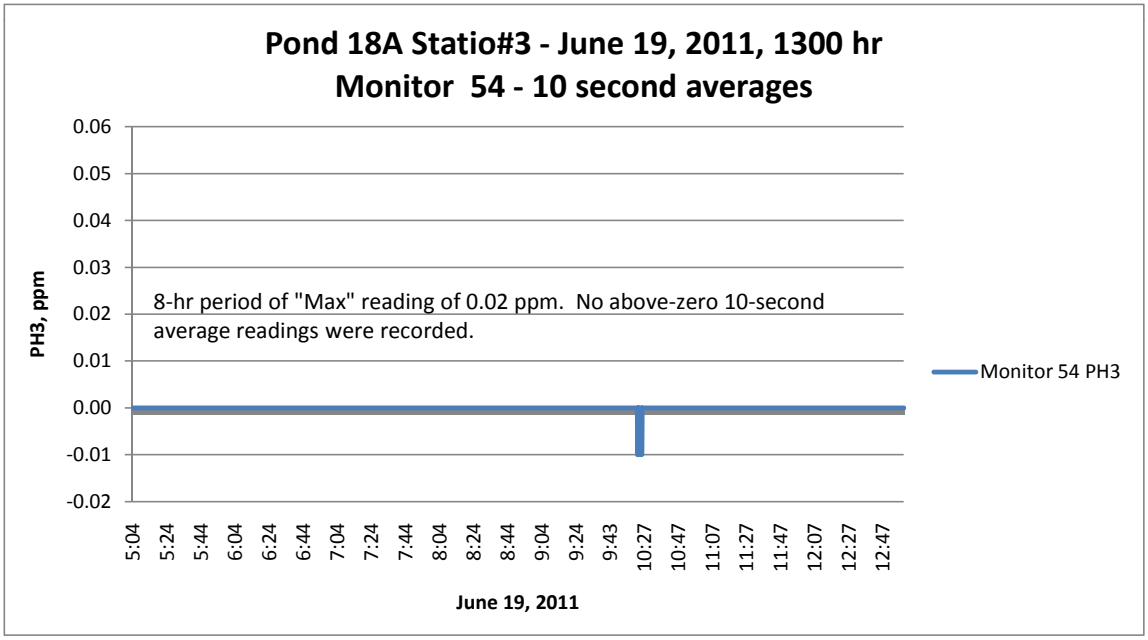

Pond 18A Statio#3 - June 19, 2011, 5:00 am
Monitor 110 - 1 minute averages
0.10
0.08
0.06
0.04
0.02
0.00
-0.02
PH3, ppm
8-hr period of "Max" reading of 0.03 ppm. Max 10-second average readings of 0.03 ppm were recorded at 5:01:33 and 5:02:33 am.
9:00
9:20
9:40
10:00
10:20
10:40
11:00
11:20
11:40
12:00
12:20
12:40
1:00
1:20
1:40
2:00
2:20
2:40
3:00
3:20
3:40
3:59
4:19
4:39
4:59
June 19, 2011
Monitor 110 PH3

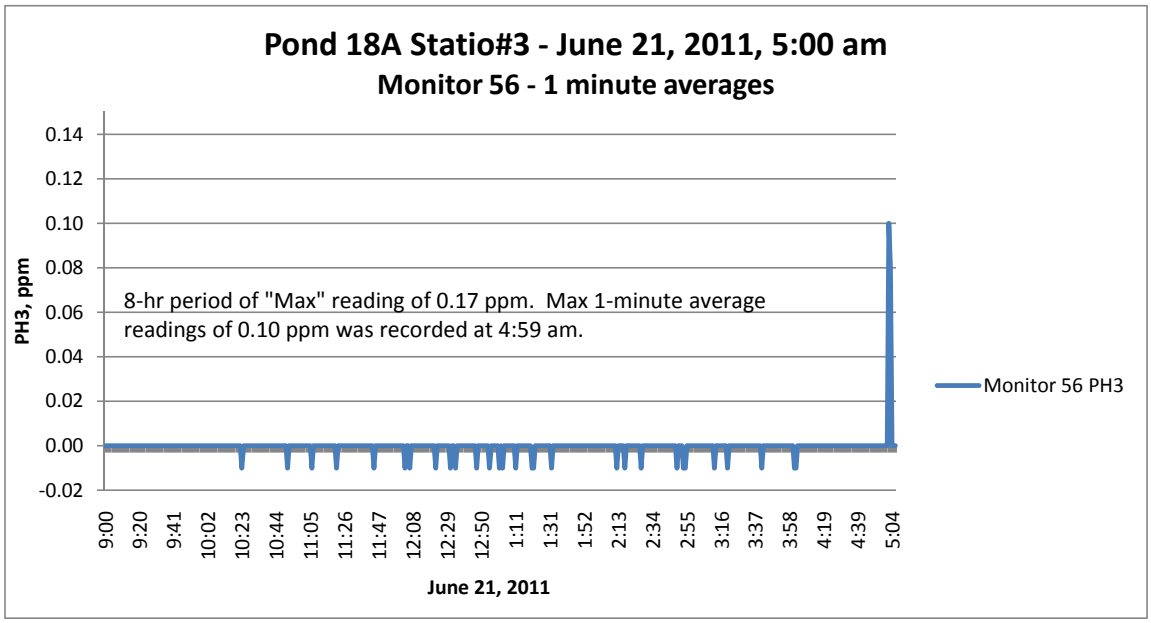

Pond 18A Statio#3 - June 19, 2011, 5:00 am
Monitor 54 - 10 second averages
0.06
0.05
0.04
0.03
0.02
0.01
0.00
-0.01
-0.02
PH3, ppm
8-hr period of "Max" reading of 0.03 ppm. No above-zero 1-second average readings were recorded.
8:59
9:19
9:39
9:59
10:19
10:39
10:59
11:19
11:39
11:59
12:19
12:39
12:59
1:19
1:39
1:59
2:19
2:39
2:59
3:19
3:39
3:59
4:19
4:39
5:00
June 19, 2011
Monitor 54 PH3

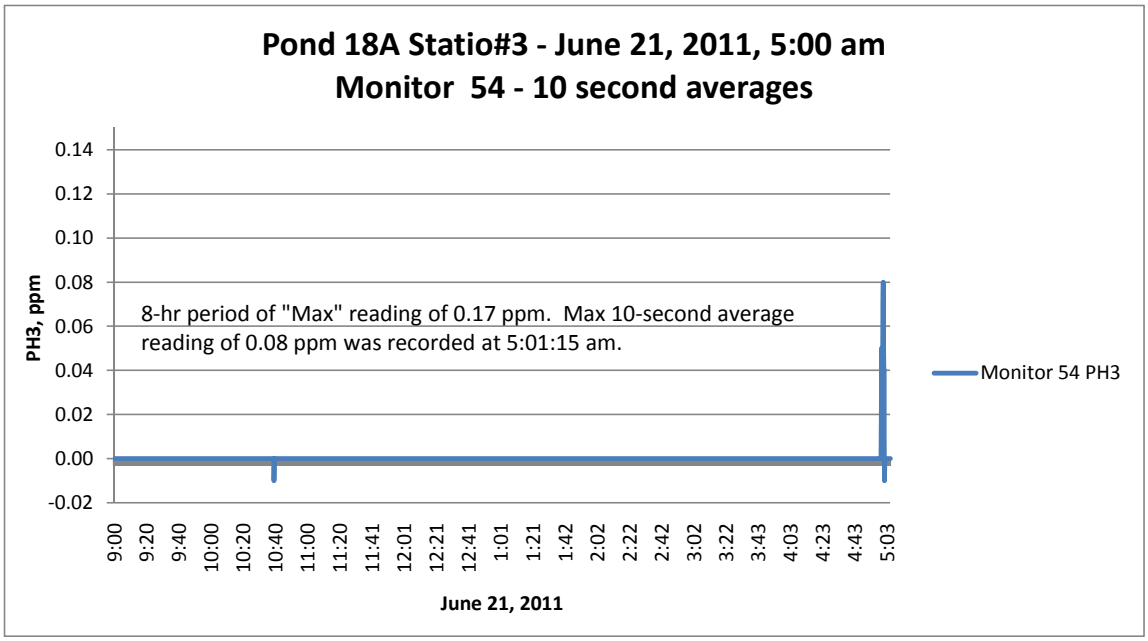

Pond 18A Station #3 - June 19, 2011, 5:00 am
Monitor 110 - 1 minute averages - 30 minute chart
PH3, ppm
0.06
0.05
0.04
0.03
0.02
0.01
0.00
-0.01
-0.02
Last 30 minutes of 8 hr period when "Max" reading of 0.03 ppm was measured on regular monitor.
4:30 4:31 4:32 4:33 4:34 4:35 4:36 4:37 4:38 4:39 4:40 4:41 4:42 4:43 4:44 4:45 4:46 4:47 4:48 4:49 4:50 4:51 4:52 4:53 4:54 4:55 4:56 4:57 4:58 4:59 5:00 5:01 5:02
June 19, 2011
Monitor 110 PH3

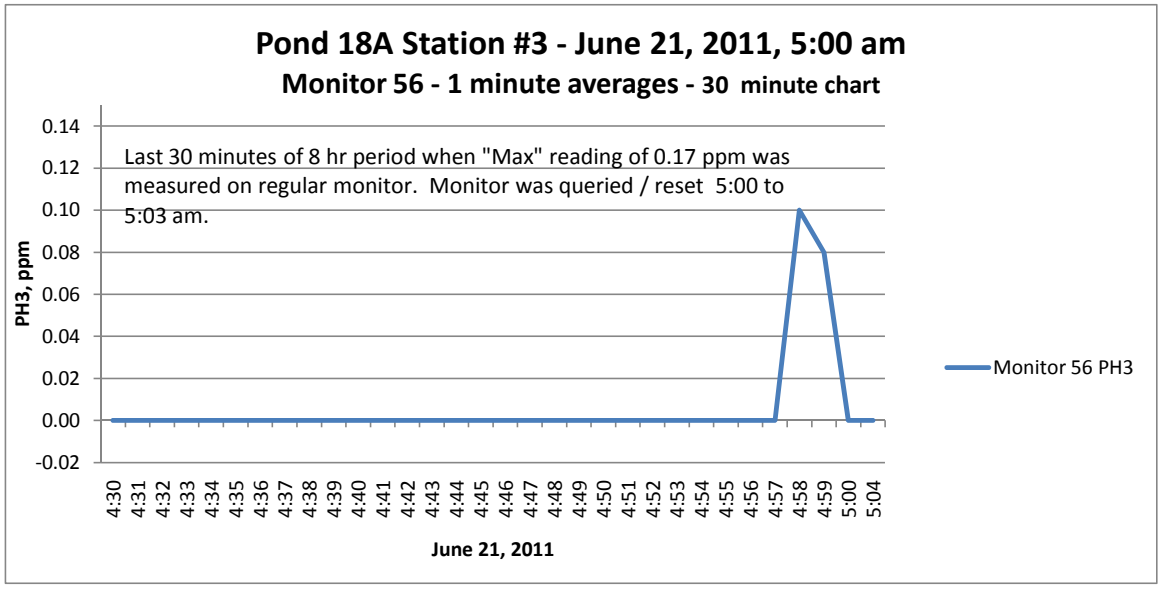

Pond 18A Station #3 - June 19, 2011, 5:00 am
Monitor 54 - 10 second averages - 30 minute chart
PH3, ppm
0.06
0.05
0.04
0.03
0.02
0.01
0.00
-0.01
-0.02
Last 30 minutes of 8-hr period when "Max" reading of 0.03 ppm was measured on regular monitor.
4:30 4:31 4:32 4:33 4:34 4:35 4:36 4:37 4:38 4:39 4:40 4:41 4:42 4:43 4:44 4:45 4:46 4:47 4:48 4:49 4:50 4:51 4:52 4:53 4:54 4:55 4:56 4:57 4:58 4:59 5:00 5:01 5:02
June 19, 2011
Monitor 54 PH3

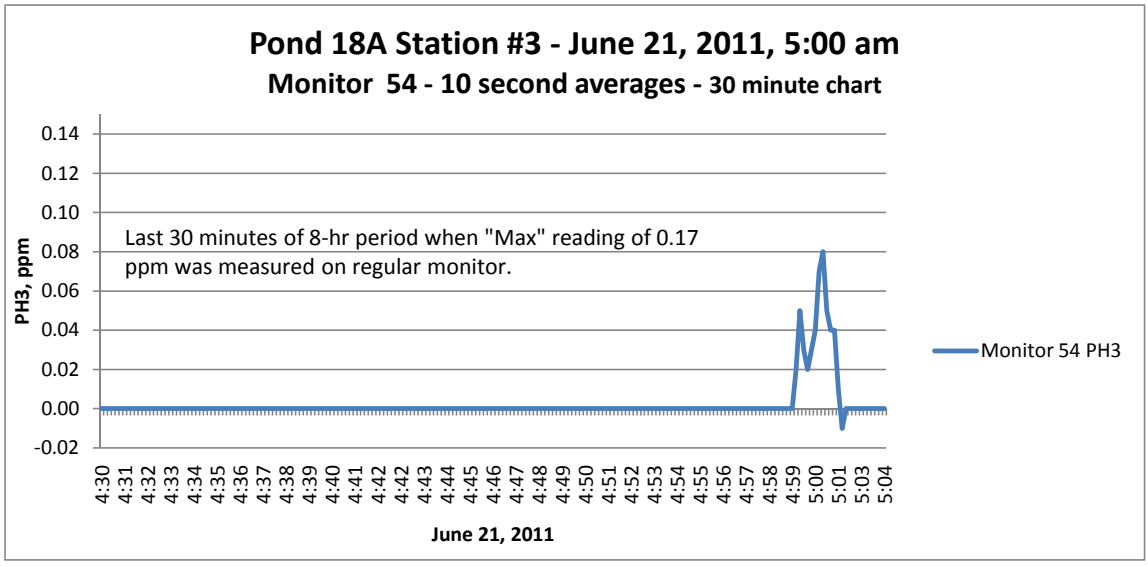

Pond 18A Statio#3 - June 19, 2011, 1300 hr
Monitor 110 - 1 minute averages
PH3, ppm
0.10
0.08
0.06
0.04
0.02
0.00
-0.02
8-hr period of "Max" reading of 0.02 ppm. No non-zero 1-minute average readings were recorded during this period.
5:05
5:25
5:45
6:05
6:25
6:45
7:05
7:25
7:45
8:05
8:25
8:45
9:05
9:25
9:44
10:29
10:49
11:09
11:29
11:49
12:08
12:27
12:46
June 19, 2011
Monitor 110 PH3

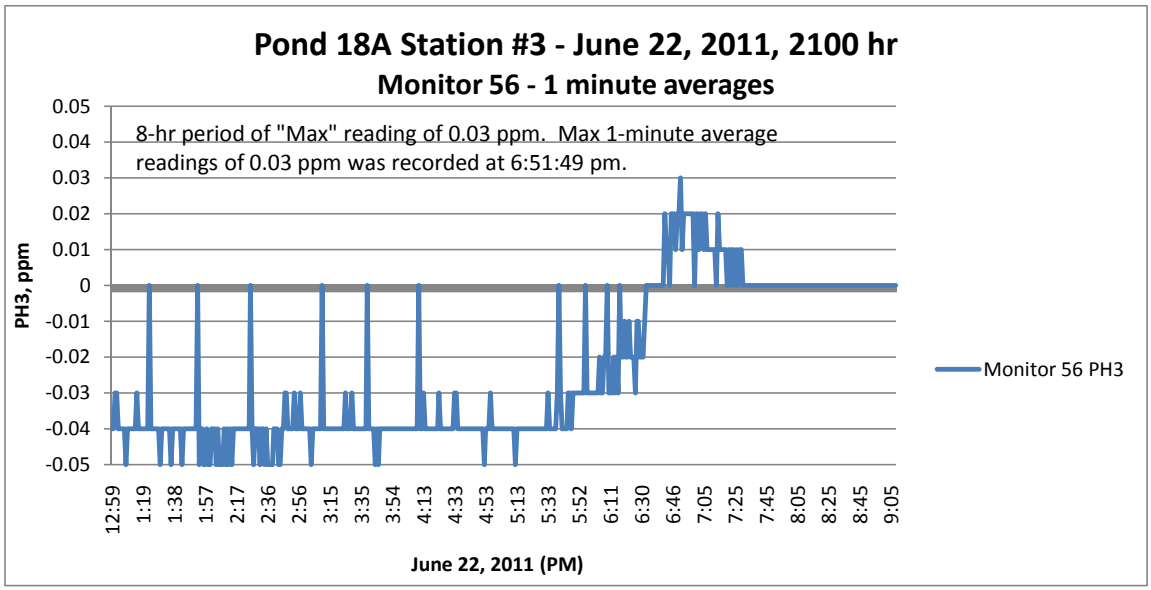

Pond 18A Statio#3 - June 19, 2011, 1300 hr
Monitor 54 - 10 second averages
PH3, ppm
0.06
0.05
0.04
0.03
0.02
0.01
0.00
-0.01
-0.02
8-hr period of "Max" reading of 0.02 ppm. No above-zero 10-second average readings were recorded.
5:04
5:24
5:44
6:04
6:24
6:44
7:04
7:24
7:44
8:04
8:24
8:44
9:04
9:24
9:43
10:27
10:47
11:07
11:27
11:47
12:07
12:27
12:47
June 19, 2011
Monitor 54 PH3

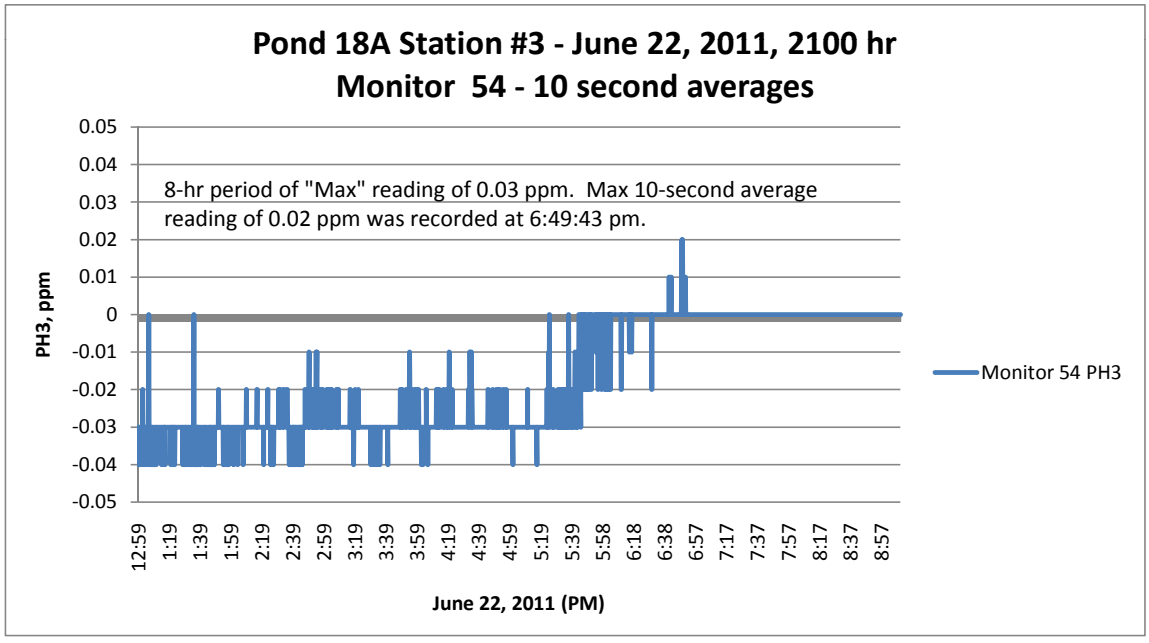

Pond 18A Statio#3 - June 21, 2011, 5:00 am
Monitor 56 - 1 minute averages
PH3, ppm
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
-0.02
8-hr period of "Max" reading of 0.17 ppm. Max 1-minute average readings of 0.10 ppm was recorded at 4:59 am.
9:00 9:20 9:41 10:02 10:23 10:44 11:05 11:26 11:47 12:08 12:29 12:50 1:11 1:31 1:52 2:13 2:34 2:55 3:16 3:37 3:58 4:19 4:39 5:04
June 21, 2011
Monitor 56 PH3

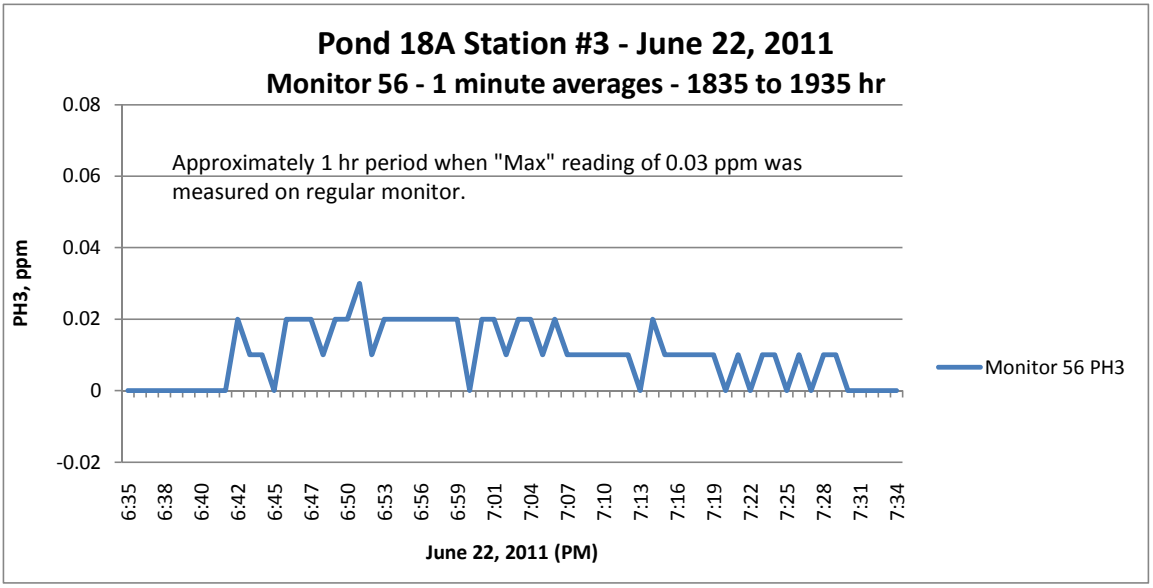

Pond 18A Statio#3 - June 21, 2011, 5:00 am
Monitor 54 - 10 second averages
PH3, ppm
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
-0.02
8-hr period of "Max" reading of 0.17 ppm. Max 10-second average reading of 0.08 ppm was recorded at 5:01:15 am.
9:00 9:20 9:40 10:00 10:20 10:40 11:00 11:20 11:41 12:01 12:21 12:41 1:01 1:21 1:42 2:02 2:22 2:42 3:02 3:22 3:43 4:03 4:23 4:43 5:03
June 21, 2011
Monitor 54 PH3

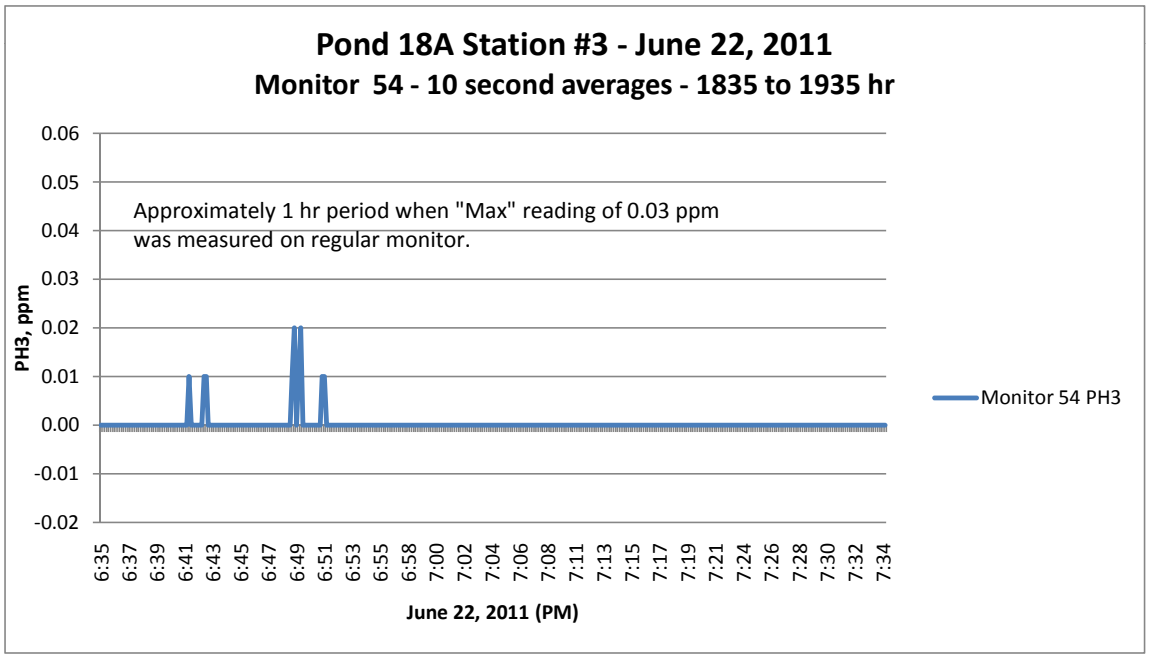

Pond 18A Station #3 - June 21, 2011, 5:00 am
Monitor 56 - 1 minute averages - 30 minute chart
Last 30 minutes of 8 hr period when "Max" reading of 0.17 ppm was measured on regular monitor. Monitor was queried / reset 5:00 to 5:03 am.
PH3, ppm
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
-0.02
4:30 4:31 4:32 4:33 4:34 4:35 4:36 4:37 4:38 4:39 4:40 4:41 4:42 4:43 4:44 4:45 4:46 4:47 4:48 4:49 4:50 4:51 4:52 4:53 4:54 4:55 4:56 4:57 4:58 4:59 5:00 5:04
June 21, 2011
Monitor 56 PH3

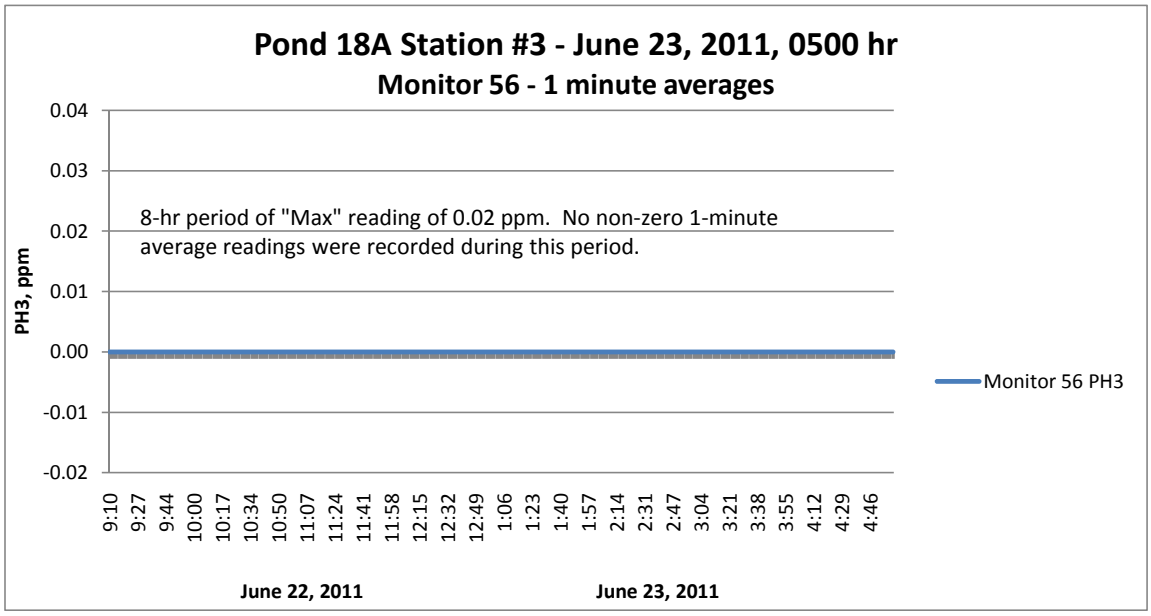

Pond 18A Station #3 - June 21, 2011, 5:00 am
Monitor 54 - 10 second averages - 30 minute chart
Last 30 minutes of 8-hr period when "Max" reading of 0.17 ppm was measured on regular monitor.
PH3, ppm
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
-0.02
4:30 4:31 4:32 4:33 4:34 4:35 4:36 4:37 4:38 4:39 4:40 4:41 4:42 4:42 4:43 4:44 4:45 4:46 4:47 4:48 4:49 4:50 4:51 4:52 4:53 4:54 4:55 4:56 4:57 4:58 4:59 5:00 5:01 5:03 5:04
June 21, 2011
Monitor 54 PH3

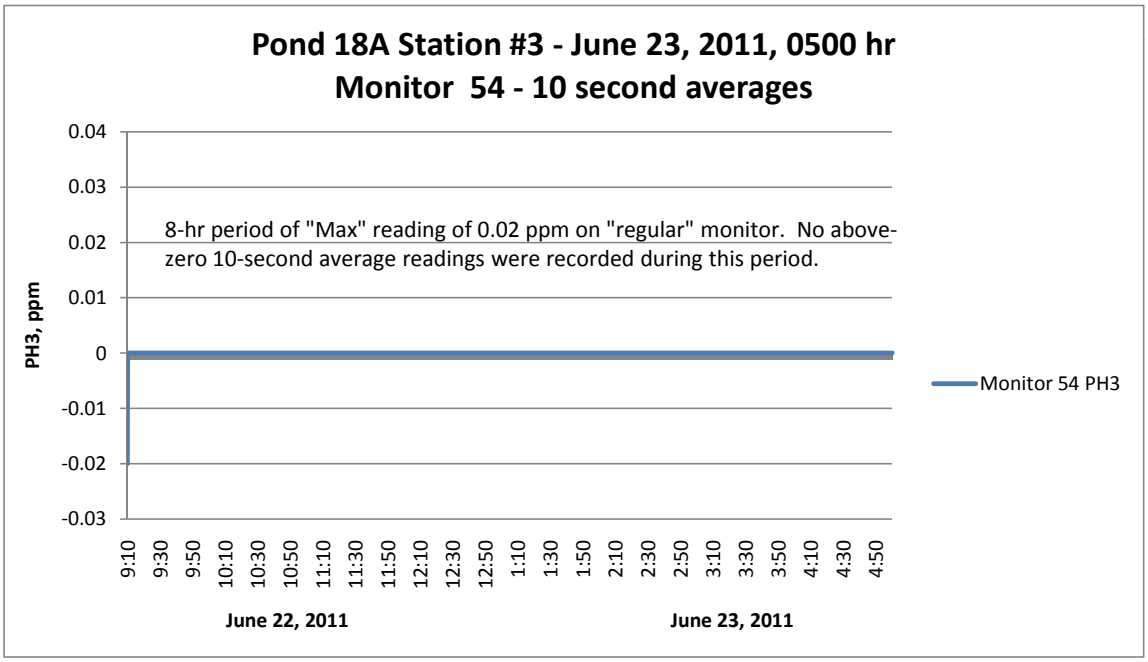

Pond 18A Station #3 - June 22, 2011, 2100 hr
Monitor 56 - 1 minute averages
8-hr period of "Max" reading of 0.03 ppm. Max 1-minute average readings of 0.03 ppm was recorded at 6:51:49 pm.
PH3, ppm
0.05
0.04
0.03
0.02
0.01
0
-0.01
-0.02
-0.03
-0.04
-0.05
12:59
1:19
1:38
1:57
2:17
2:36
2:56
3:15
3:35
3:54
4:13
4:33
4:53
5:13
5:33
5:52
6:11
6:30
6:46
7:05
7:25
7:45
8:05
8:25
8:45
9:05
June 22, 2011 (PM)
Monitor 56 PH3

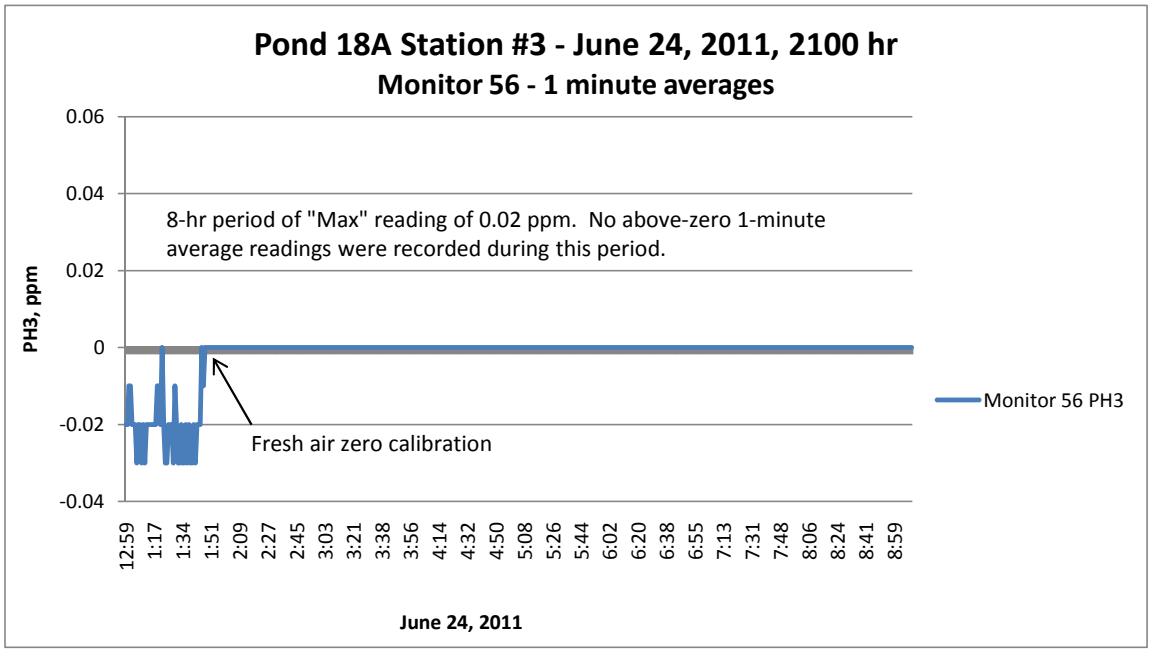

Pond 18A Station #3 - June 22, 2011, 2100 hr
Monitor 54 - 10 second averages
8-hr period of "Max" reading of 0.03 ppm. Max 10-second average reading of 0.02 ppm was recorded at 6:49:43 pm.
PH3, ppm
0.05
0.04
0.03
0.02
0.01
0
-0.01
-0.02
-0.03
-0.04
-0.05
12:59
1:19
1:39
1:59
2:19
2:39
2:59
3:19
3:39
3:59
4:19
4:39
4:59
5:19
5:39
5:58
6:18
6:38
6:57
7:17
7:37
7:57
8:17
8:37
8:57
June 22, 2011 (PM)
Monitor 54 PH3

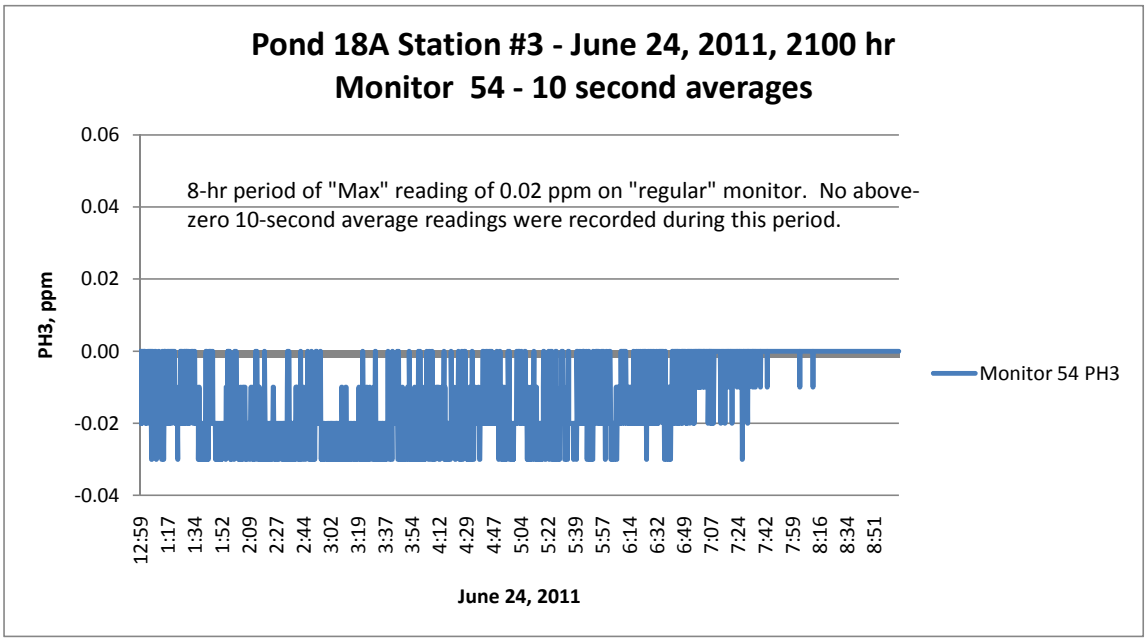

Pond 18A Station #3 - June 22, 2011
Monitor 56 - 1 minute averages - 1835 to 1935 hr
Approximately 1 hr period when "Max" reading of 0.03 ppm was measured on regular monitor.
PH3, ppm
0.08
0.06
0.04
0.02
0
-0.02
6:35
6:38
6:40
6:42
6:45
6:47
6:50
6:53
6:56
6:59
7:01
7:04
7:07
7:10
7:13
7:16
7:19
7:22
7:25
7:28
7:31
7:34
June 22, 2011 (PM)
Monitor 56 PH3

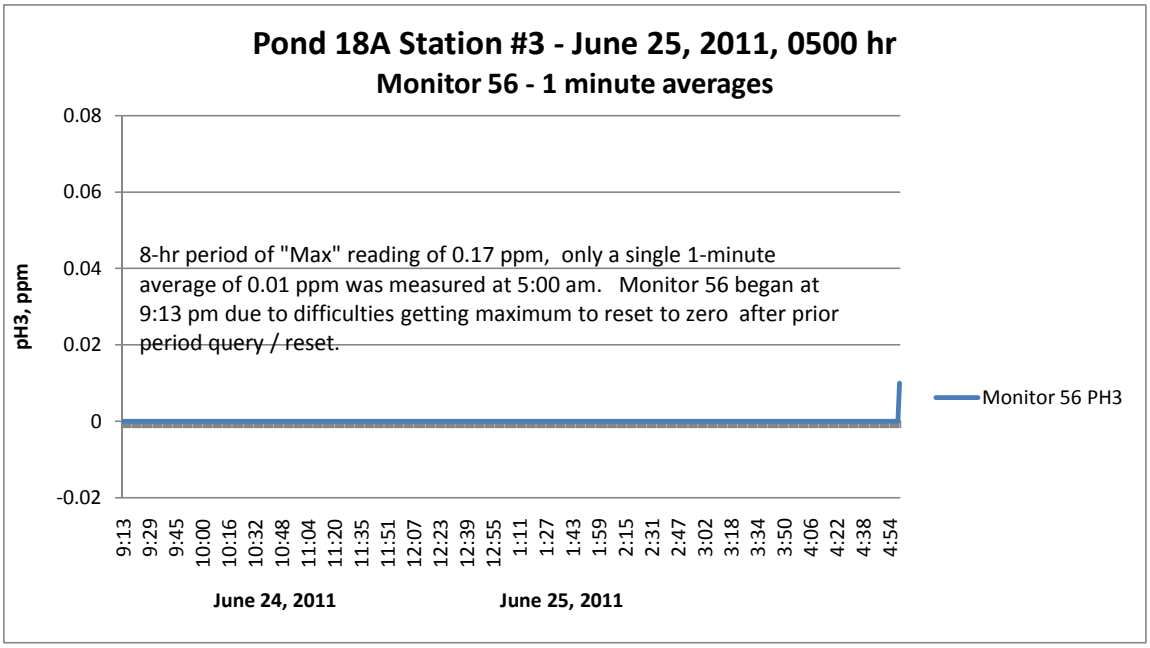

Pond 18A Station #3 - June 22, 2011
Monitor 54 - 10 second averages - 1835 to 1935 hr
Approximately 1 hr period when "Max" reading of 0.03 ppm was measured on regular monitor.
PH3, ppm
0.06
0.05
0.04
0.03
0.02
0.01
0.00
-0.01
-0.02
6:35
6:37
6:39
6:41
6:43
6:45
6:47
6:49
6:51
6:53
6:55
6:58
7:00
7:02
7:04
7:06
7:08
7:11
7:13
7:15
7:17
7:19
7:21
7:24
7:26
7:28
7:30
7:32
7:34
June 22, 2011 (PM)
Monitor 54 PH3

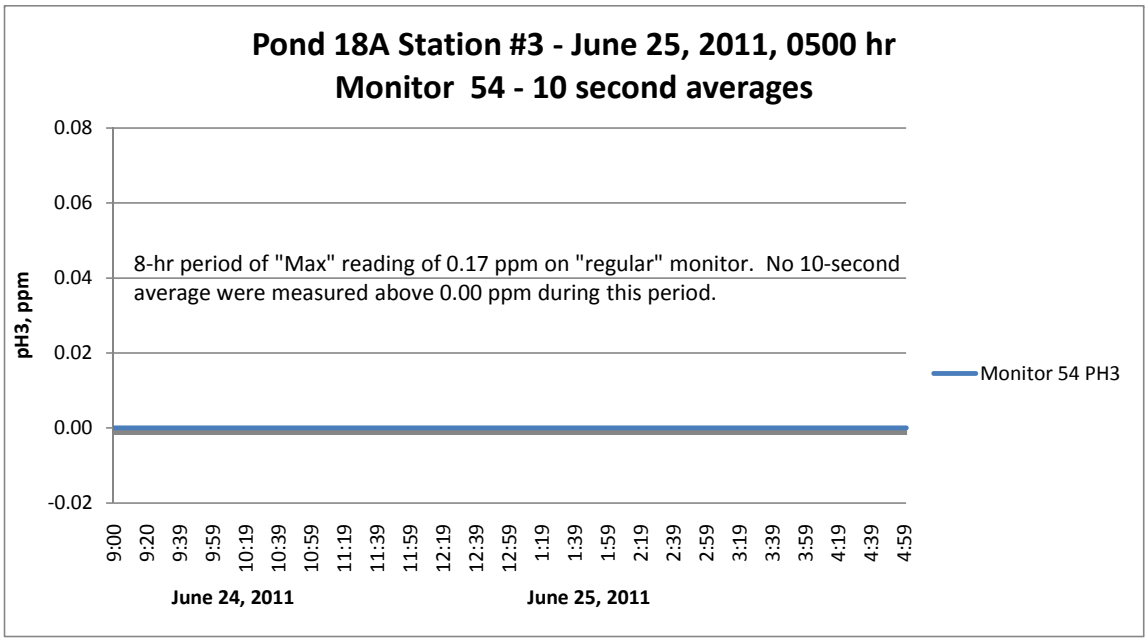

Pond 18A Station #3 - June 23, 2011, 0500 hr
Monitor 56 - 1 minute averages
8-hr period of "Max" reading of 0.02 ppm. No non-zero 1-minute average readings were recorded during this period.
PH3, ppm
0.04
0.03
0.02
0.01
0.00
-0.01
-0.02
9:10
9:27
9:44
10:00
10:17
10:34
10:50
11:07
11:24
11:41
11:58
12:15
12:32
12:49
1:06
1:23
1:40
1:57
2:14
2:31
2:47
3:04
3:21
3:38
3:55
4:12
4:29
4:46
June 22, 2011
June 23, 2011
Monitor 56 PH3

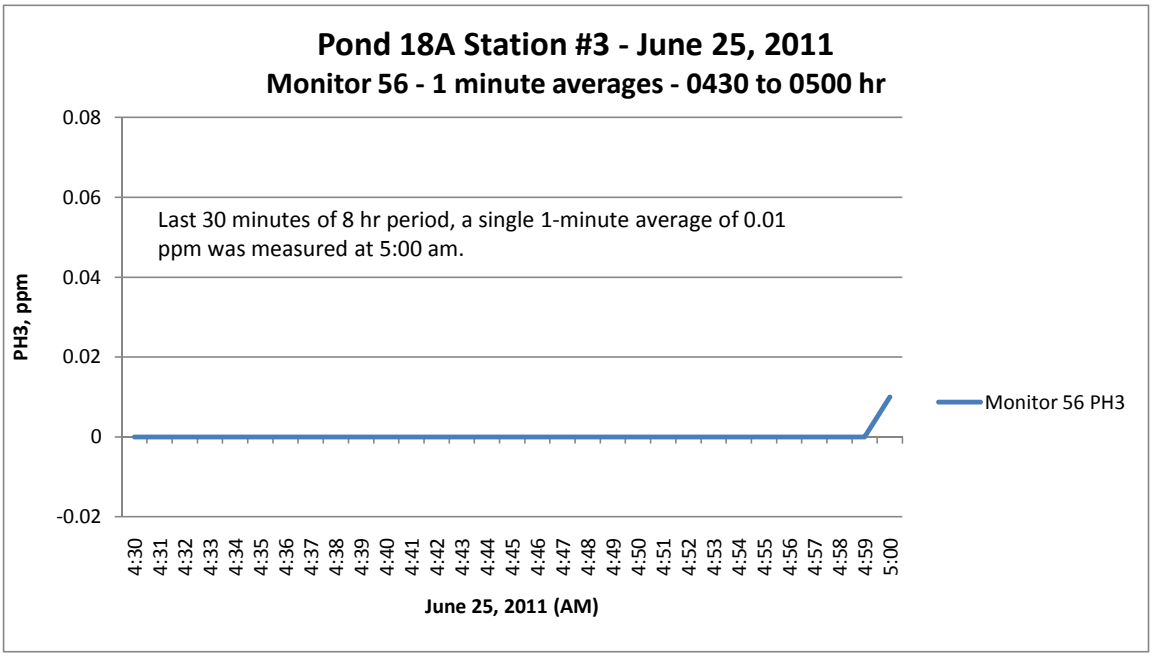

Pond 18A Station #3 - June 23, 2011, 0500 hr
Monitor 54 - 10 second averages
8-hr period of "Max" reading of 0.02 ppm on "regular" monitor. No above-zero 10-second average readings were recorded during this period.
PH3, ppm
0.04
0.03
0.02
0.01
0
-0.01
-0.02
-0.03
9:10
9:30
9:50
10:10
10:30
10:50
11:10
11:30
11:50
12:10
12:30
12:50
1:10
1:30
1:50
2:10
2:30
2:50
3:10
3:30
3:50
4:10
4:30
4:50
June 22, 2011
June 23, 2011
Monitor 54 PH3

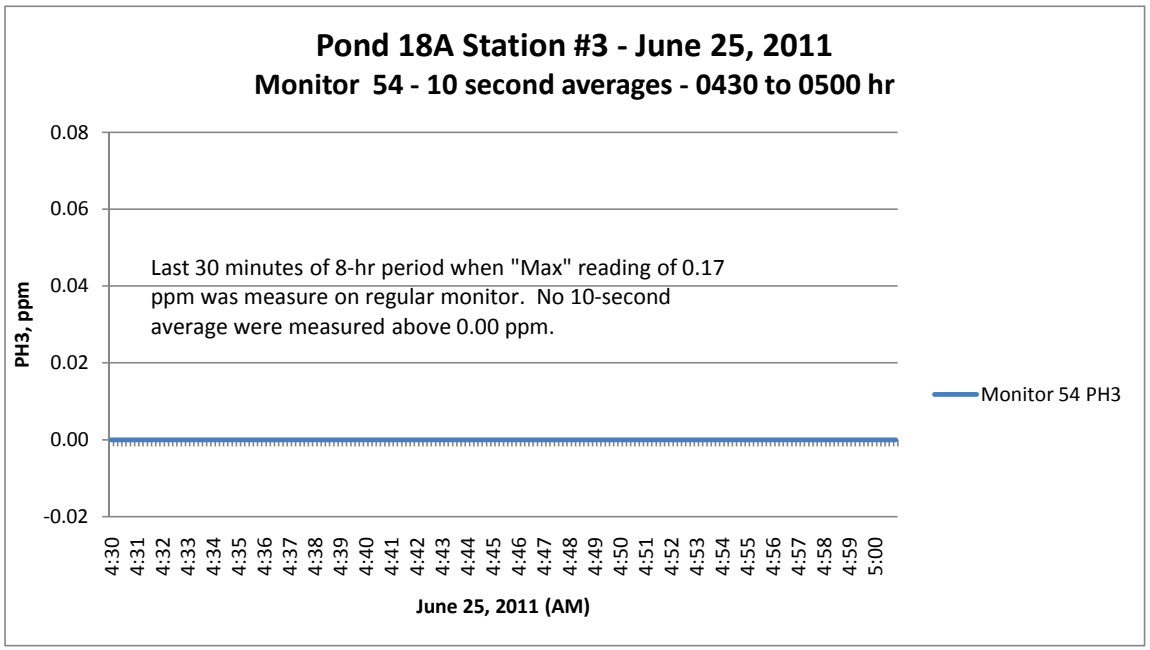

Pond 18A Station #3 - June 24, 2011, 2100 hr
Monitor 56 - 1 minute averages
PH3, ppm
0.06
0.04
0.02
0
-0.02
-0.04
8-hr period of "Max" reading of 0.02 ppm. No above-zero 1-minute average readings were recorded during this period.
Fresh air zero calibration
12:59
1:17
1:34
1:51
2:09
2:27
2:45
3:03
3:21
3:38
3:56
4:14
4:32
4:50
5:08
5:26
5:44
6:02
6:20
6:38
6:55
7:13
7:31
7:48
8:06
8:24
8:41
8:59
June 24, 2011
Monitor 56 PH3

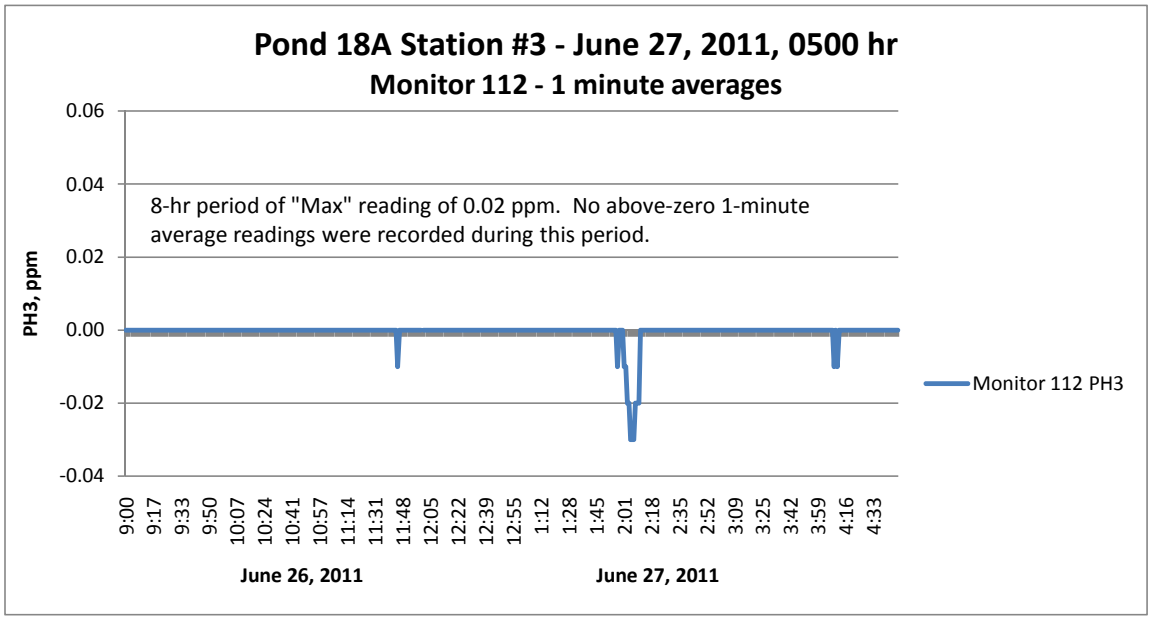

Pond 18A Station #3 - June 24, 2011, 2100 hr
Monitor 54 - 10 second averages
PH3, ppm
0.06
0.04
0.02
0.00
-0.02
-0.04
8-hr period of "Max" reading of 0.02 ppm on "regular" monitor. No above-zero 10-second average readings were recorded during this period.
12:59
1:17
1:34
1:52
2:09
2:27
2:44
3:02
3:19
3:37
3:54
4:12
4:29
4:47
5:04
5:22
5:39
5:57
6:14
6:32
6:49
7:07
7:24
7:42
7:59
8:16
8:34
8:51
June 24, 2011
Monitor 54 PH3

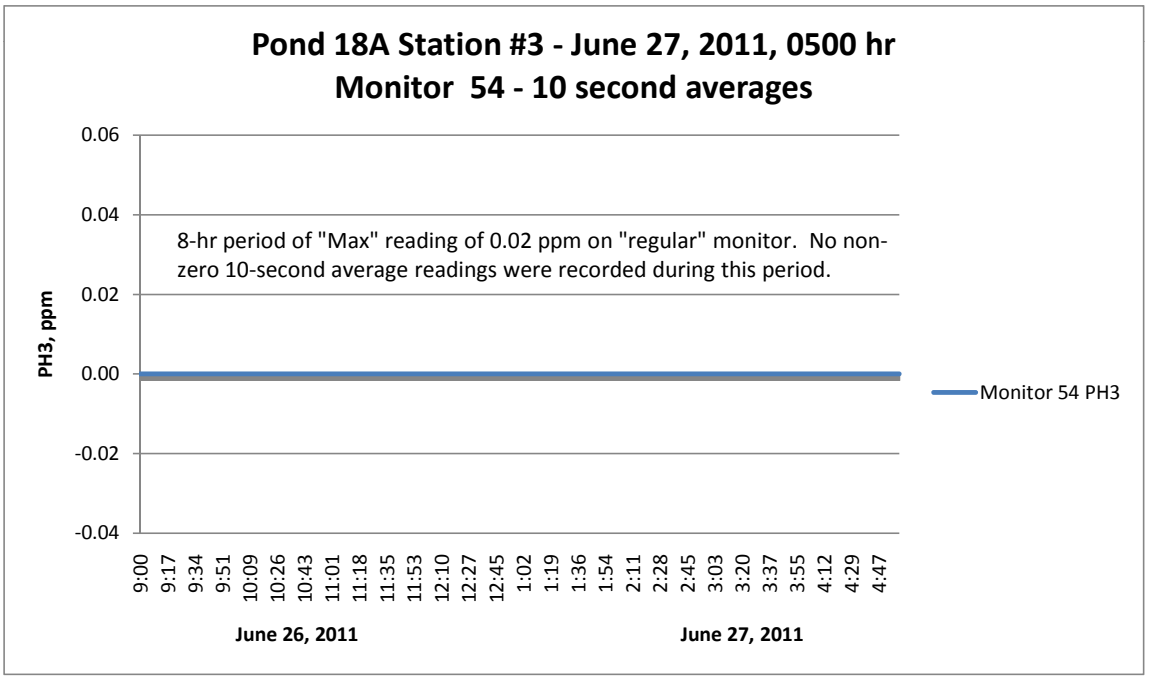

Pond 18A Station #3 - June 25, 2011, 0500 hr
Monitor 56 - 1 minute averages
pH3, ppm
0.08
0.06
0.04
0.02
0
-0.02
8-hr period of "Max" reading of 0.17 ppm, only a single 1-minute average of 0.01 ppm was measured at 5:00 am. Monitor 56 began at 9:13 pm due to difficulties getting maximum to reset to zero after prior period query / reset.
9:13 9:29 9:45 10:00 10:16 10:32 10:48 11:04 11:20 11:35 11:51 12:07 12:23 12:39 12:55 1:11 1:27 1:43 1:59 2:15 2:31 2:47 3:02 3:18 3:34 3:50 4:06 4:22 4:38 4:54
June 24, 2011
June 25, 2011
Monitor 56 PH3

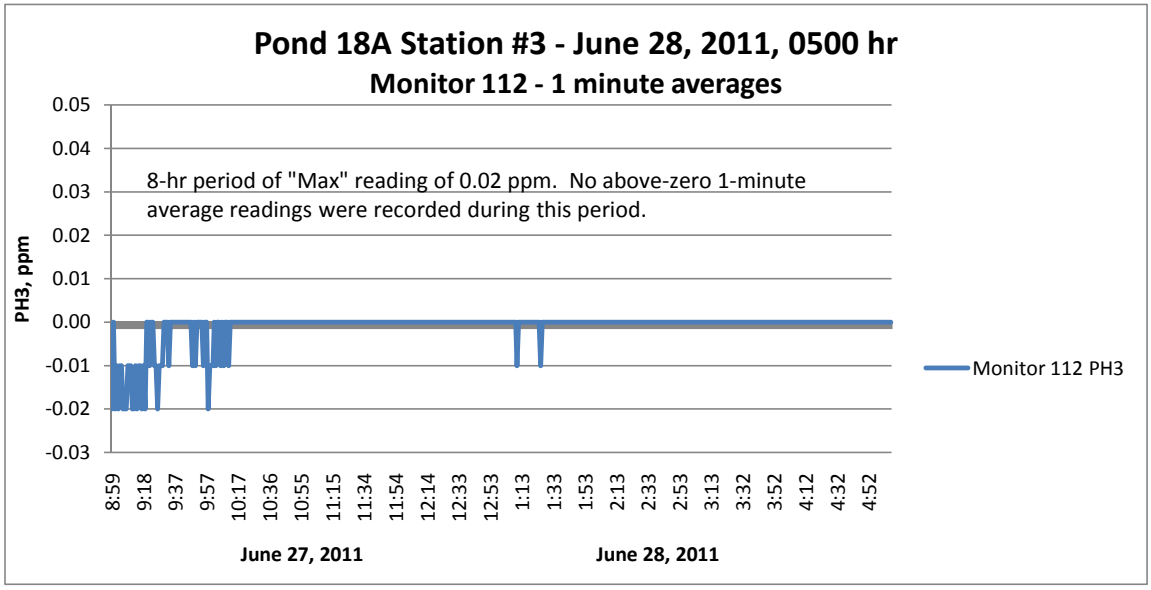

Pond 18A Station #3 - June 25, 2011, 0500 hr
Monitor 54 - 10 second averages
pH3, ppm
0.08
0.06
0.04
0.02
0.00
-0.02
8-hr period of "Max" reading of 0.17 ppm on "regular" monitor. No 10-second average were measured above 0.00 ppm during this period.
9:00 9:20 9:39 9:59 10:19 10:39 10:59 11:19 11:39 11:59 12:19 12:39 12:59 1:19 1:39 1:59 2:19 2:39 2:59 3:19 3:39 3:59 4:19 4:39 4:59
June 24, 2011
June 25, 2011
Monitor 54 PH3

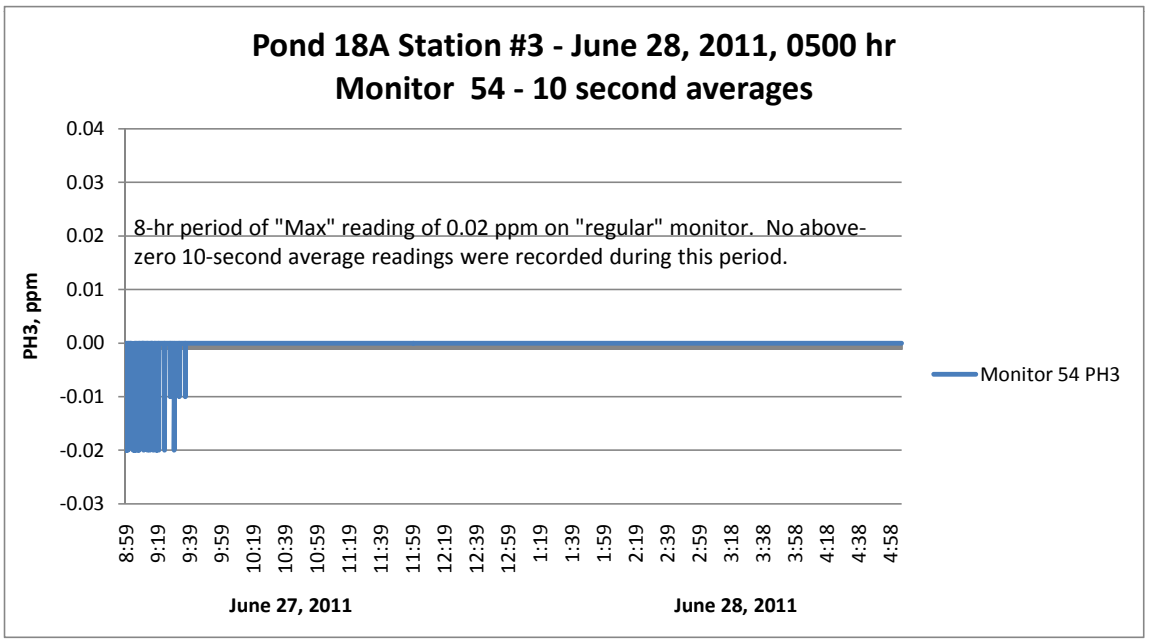

Pond 18A Station #3 - June 25, 2011
Monitor 56 - 1 minute averages - 0430 to 0500 hr
Last 30 minutes of 8 hr period, a single 1-minute average of 0.01 ppm was measured at 5:00 am.
PH3, ppm
0.08
0.06
0.04
0.02
0
-0.02
4:30 4:31 4:32 4:33 4:34 4:35 4:36 4:37 4:38 4:39 4:40 4:41 4:42 4:43 4:44 4:45 4:46 4:47 4:48 4:49 4:50 4:51 4:52 4:53 4:54 4:55 4:56 4:57 4:58 4:59 5:00
June 25, 2011 (AM)
Monitor 56 PH3

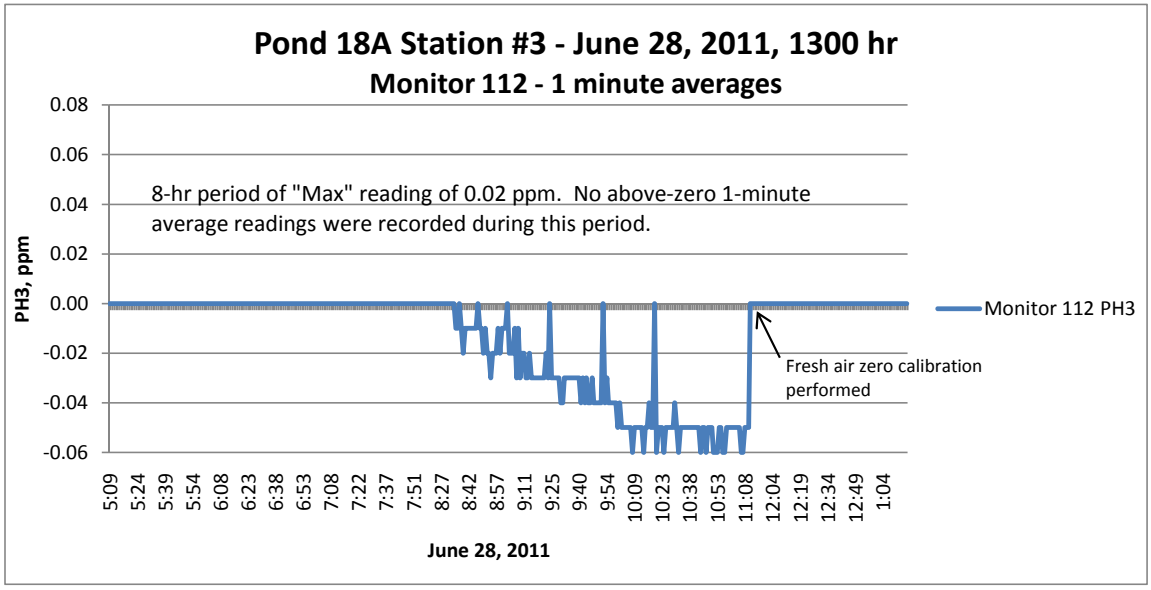

Pond 18A Station #3 - June 25, 2011
Monitor 54 - 10 second averages - 0430 to 0500 hr
Last 30 minutes of 8-hr period when "Max" reading of 0.17 ppm was measure on regular monitor. No 10-second average were measured above 0.00 ppm.
PH3, ppm
0.08
0.06
0.04
0.02
0.00
-0.02
4:30 4:31 4:32 4:33 4:34 4:35 4:36 4:37 4:38 4:39 4:40 4:41 4:42 4:43 4:44 4:45 4:46 4:47 4:48 4:49 4:50 4:51 4:52 4:53 4:54 4:55 4:56 4:57 4:58 4:59 5:00
June 25, 2011 (AM)
Monitor 54 PH3

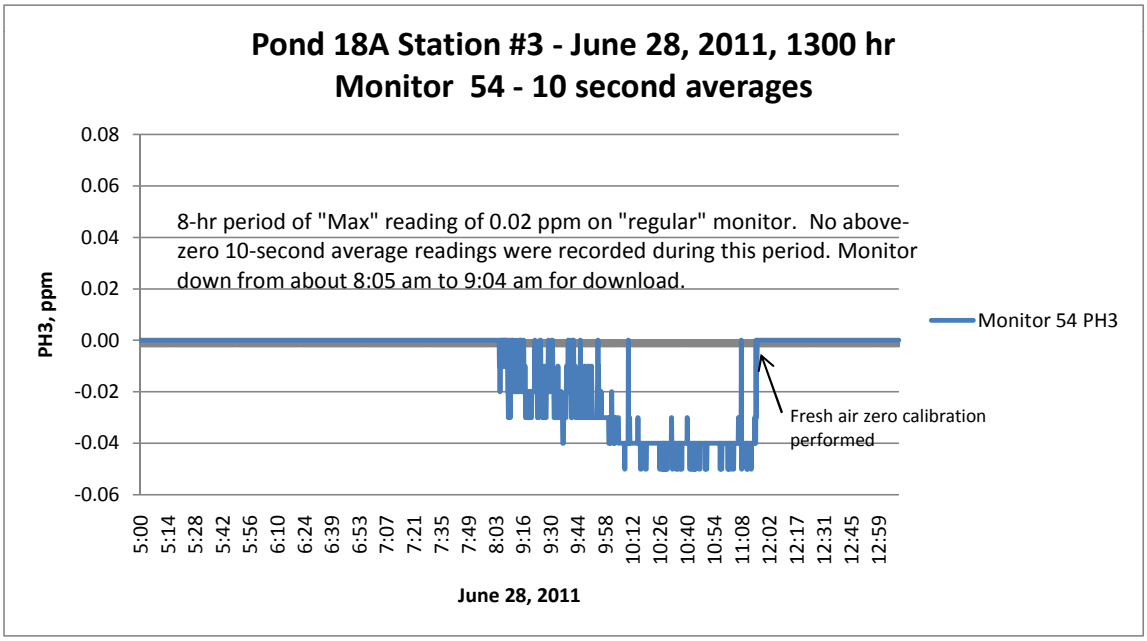

Pond 18A Station #3 - June 27, 2011, 0500 hr
Monitor 112 - 1 minute averages
8-hr period of "Max" reading of 0.02 ppm. No above-zero 1-minute average readings were recorded during this period.
PH3, ppm
0.06
0.04
0.02
0.00
-0.02
-0.04
9:00 9:17 9:33 9:50 10:07 10:24 10:41 10:57 11:14 11:31 11:48 12:05 12:22 12:39 12:55 1:12 1:28 1:45 2:01 2:18 2:35 2:52 3:09 3:25 3:42 3:59 4:16 4:33
June 26, 2011
June 27, 2011
Monitor 112 PH3

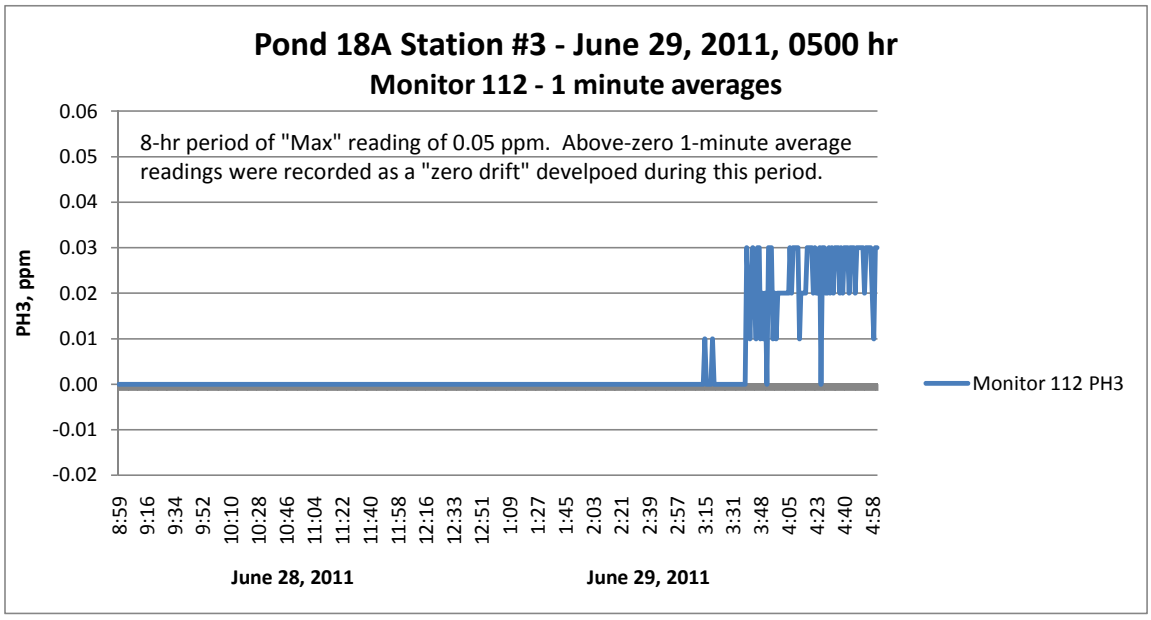

Pond 18A Station #3 - June 27, 2011, 0500 hr
Monitor 54 - 10 second averages
8-hr period of "Max" reading of 0.02 ppm on "regular" monitor. No non-zero 10-second average readings were recorded during this period.
PH3, ppm
0.06
0.04
0.02
0.00
-0.02
-0.04
9:00 9:17 9:34 9:51 10:09 10:26 10:43 11:01 11:18 11:35 11:53 12:10 12:27 12:45 1:02 1:19 1:36 1:54 2:11 2:28 2:45 3:03 3:20 3:37 3:55 4:12 4:29 4:47
June 26, 2011
June 27, 2011
Monitor 54 PH3

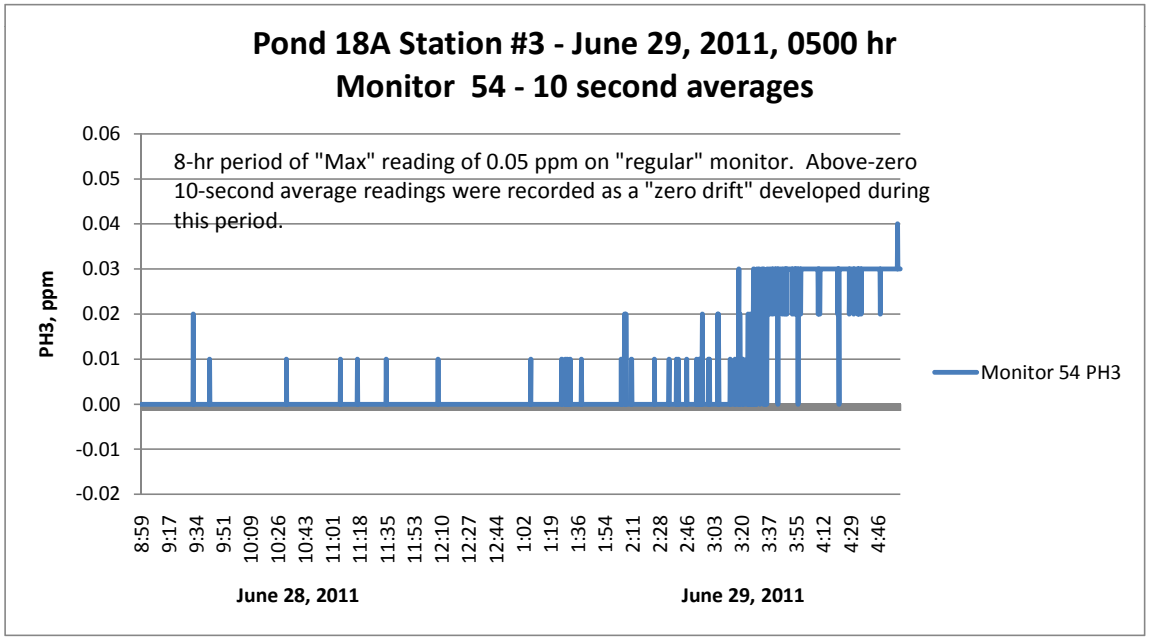

Pond 18A Station #3 - June 28, 2011, 0500 hr
Monitor 112 - 1 minute averages
8-hr period of "Max" reading of 0.02 ppm. No above-zero 1-minute average readings were recorded during this period.
PH3, ppm
0.05
0.04
0.03
0.02
0.01
0.00
-0.01
-0.02
-0.03
8:59
9:18
9:37
9:57
10:17
10:36
10:55
11:15
11:34
11:54
12:14
12:33
12:53
1:13
1:33
1:53
2:13
2:33
2:53
3:13
3:32
3:52
4:12
4:32
4:52
June 27, 2011
June 28, 2011
Monitor 112 PH3

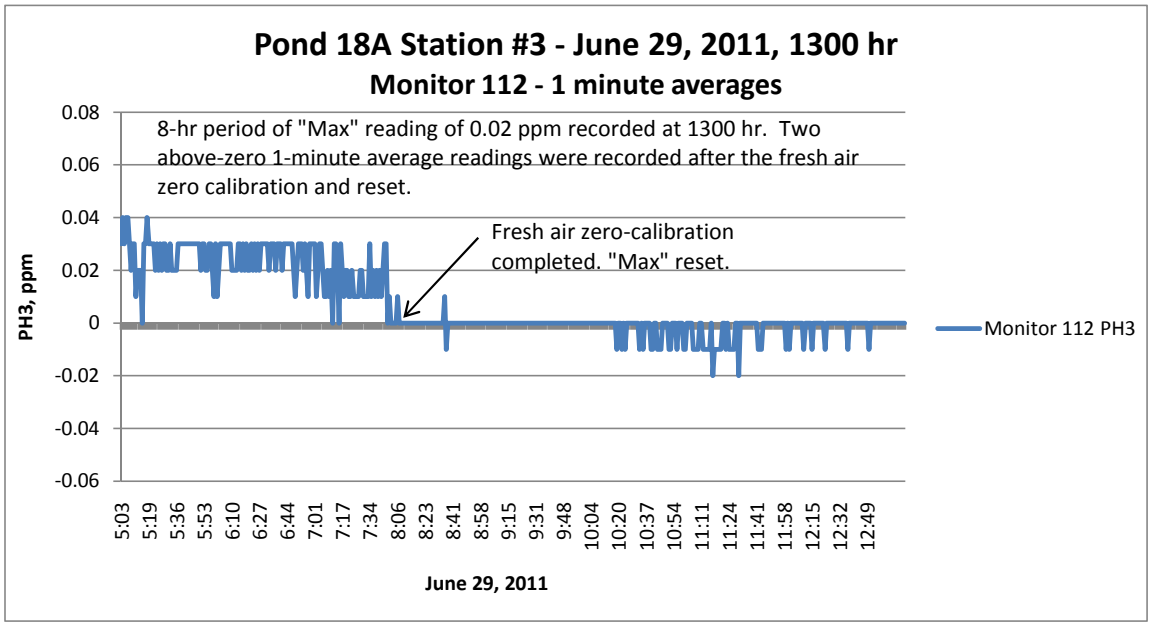

Pond 18A Station #3 - June 28, 2011, 0500 hr
Monitor 54 - 10 second averages
8-hr period of "Max" reading of 0.02 ppm on "regular" monitor. No above-zero 10-second average readings were recorded during this period.
PH3, ppm
0.04
0.03
0.02
0.01
0.00
-0.01
-0.02
-0.03
8:59
9:19
9:39
9:59
10:19
10:39
10:59
11:19
11:39
11:59
12:19
12:39
12:59
1:19
1:39
1:59
2:19
2:39
2:59
3:18
3:38
3:58
4:18
4:38
4:58
June 27, 2011
June 28, 2011
Monitor 54 PH3

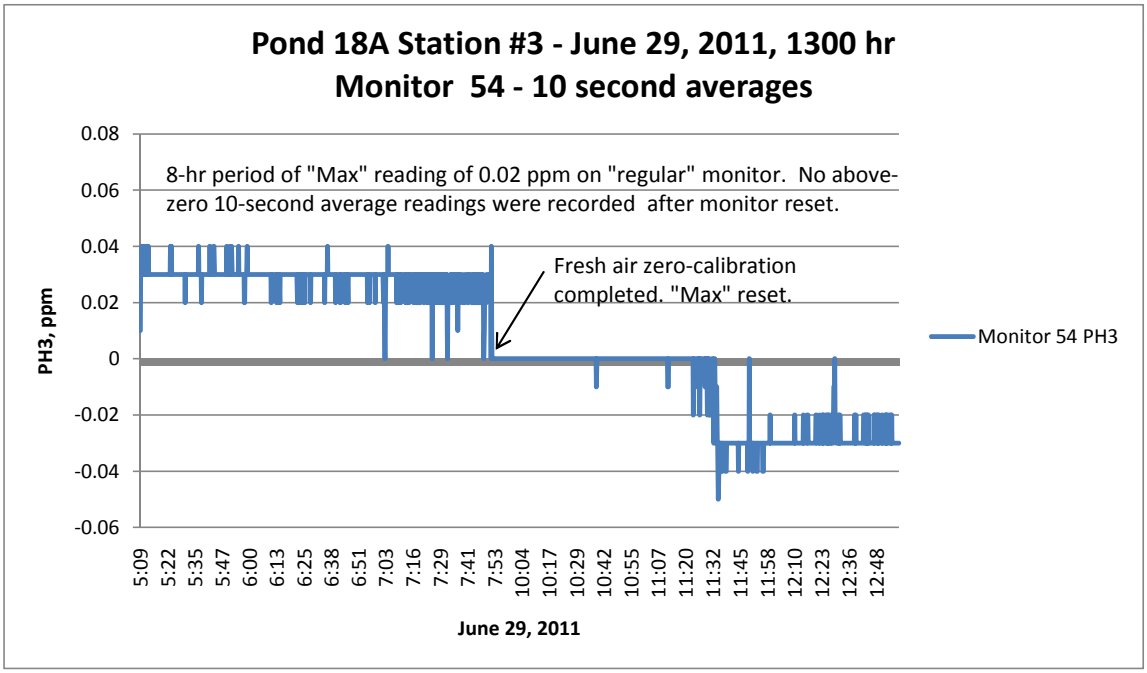

Pond 18A Station #3 - June 28, 2011, 1300 hr
Monitor 112 - 1 minute averages
8-hr period of "Max" reading of 0.02 ppm. No above-zero 1-minute average readings were recorded during this period.
Fresh air zero calibration performed
Monitor 112 PH3
PH3, ppm
0.08
0.06
0.04
0.02
0.00
-0.02
-0.04
-0.06
5:09 5:24 5:39 5:54 6:08 6:23 6:38 6:53 7:08 7:22 7:37 7:51 8:27 8:42 8:57 9:11 9:25 9:40 9:54 10:09 10:23 10:38 10:53 11:08 12:04 12:19 12:34 12:49 1:04
June 28, 2011


Pond 18A Station #3 - June 28, 2011, 1300 hr
Monitor 54 - 10 second averages
8-hr period of "Max" reading of 0.02 ppm on "regular" monitor. No above-zero 10-second average readings were recorded during this period. Monitor down from about 8:05 am to 9:04 am for download.
Fresh air zero calibration performed
Monitor 54 PH3
PH3, ppm
0.08
0.06
0.04
0.02
0.00
-0.02
-0.04
-0.06
5:00 5:14 5:28 5:42 5:56 6:10 6:24 6:39 6:53 7:07 7:21 7:35 7:49 8:03 9:16 9:30 9:44 9:58 10:12 10:26 10:40 10:54 11:08 12:02 12:17 12:31 12:45 12:59
June 28, 2011


Pond 18A Station #3 - June 29, 2011, 0500 hr
Monitor 112 - 1 minute averages
8-hr period of "Max" reading of 0.05 ppm. Above-zero 1-minute average readings were recorded as a "zero drift" develpoed during this period.
PH3, ppm
0.06
0.05
0.04
0.03
0.02
0.01
0.00
-0.01
-0.02
8:59
9:16
9:34
9:52
10:10
10:28
10:46
11:04
11:22
11:40
11:58
12:16
12:33
12:51
1:09
1:27
1:45
2:03
2:21
2:39
2:57
3:15
3:31
3:48
4:05
4:23
4:40
4:58
June 28, 2011
June 29, 2011
Monitor 112 PH3


Pond 18A Station #3 - June 29, 2011, 0500 hr
Monitor 54 - 10 second averages
8-hr period of "Max" reading of 0.05 ppm on "regular" monitor. Above-zero 10-second average readings were recorded as a "zero drift" developed during this period.
PH3, ppm
0.06
0.05
0.04
0.03
0.02
0.01
0.00
-0.01
-0.02
8:59
9:17
9:34
9:51
10:09
10:26
10:43
11:01
11:18
11:35
11:53
12:10
12:27
12:44
1:02
1:19
1:36
1:54
2:11
2:28
2:46
3:03
3:20
3:37
3:55
4:12
4:29
4:46
June 28, 2011
June 29, 2011
Monitor 54 PH3


Pond 18A Station #3 - June 29, 2011, 1300 hr
Monitor 112 - 1 minute averages
8-hr period of "Max" reading of 0.02 ppm recorded at 1300 hr. Two above-zero 1-minute average readings were recorded after the fresh air zero calibration and reset.
Fresh air zero-calibration completed. "Max" reset.
PH3, ppm
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
5:03
5:19
5:36
5:53
6:10
6:27
6:44
7:01
7:17
7:34
8:06
8:23
8:41
8:58
9:15
9:31
9:48
10:04
10:20
10:37
10:54
11:11
11:24
11:41
11:58
12:15
12:32
12:49
June 29, 2011
Monitor 112 PH3


Pond 18A Station #3 - June 29, 2011, 1300 hr
Monitor 54 - 10 second averages
8-hr period of "Max" reading of 0.02 ppm on "regular" monitor. No above-zero 10-second average readings were recorded after monitor reset.
Fresh air zero-calibration completed. "Max" reset.
PH3, ppm
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
5:09
5:22
5:35
5:47
6:00
6:13
6:25
6:38
6:51
7:03
7:16
7:29
7:41
7:53
10:04
10:17
10:29
10:42
10:55
11:07
11:20
11:32
11:45
11:58
12:10
12:23
12:36
12:48
June 29, 2011
Monitor 54 PH3